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PSYCHOLOGY AND PHILOSOPHY.

I.—THE DEPENDENCE OF QUALITY ON SPECIFIC ENERGIES.

I.

THE history of Physiology can point to no more memorable event than the discovery of the independent irritability of muscular tissue. When, in the latter half of last century, it became an acknowledged truth that muscles are themselves possessed of the power of reacting against external stimulation, the intelligibility of life entered a new phase. Living motion, the most salient manifestation of vitality, was thus recognised to be the indwelling property of the very material which exhibits the movements. The bodily substance, the concrete material of the muscle, which—like any other matter—had hitherto been considered inert, was now seen to contract by dint of a principle of life residing within its own self; it was found to display its marvellous function of motility independent of outside animation, without the slightest intervention on the part of vital spirits descending to it through the nerves.

The discovery of this elemental fact in organic nature was by no means accidentally hit upon or intellectually anticipated. Only by most patient research and the justified sacrifice of many

an animal life,¹ did Haller at last succeed in proving, or, to speak rigorously, succeed in all but conclusively demonstrating the inrooted vital energy, the *vis insita* of muscular substance, thus founding the science which he himself called "Animated Anatomy".

It was the growing consciousness of the same physiological truth which, not many years later, cast such lustre on Bichat's labours. Inspired with the ideas of inherent vitality and animated anatomy, this young investigator showed that animal parts are made up of a few elementary tissues, and that the vital performances of these parts result from the joint-play of the immanent and specific physiological properties of such elementary components.

This conception of the co-operation of elementary tissue-properties in the effectual production of the most complex vital activities is truly luminous in its quantitative and also in its teleological bearings, but—as will presently appear—it is at the same time extremely misleading in its qualitative applications. However, it has actually proved a conception so fertile and long-lived that, after having originated an era of unprecedented physiological revelation, it still remains the guiding principle of many of the most prominent physiologists. Claude Bernard, so late as 1872, thus enunciated the same profession: "The aim of general physiology is accurately to determine, by experimental analysis, the elementary properties of the tissues, in order to arrive deductively at a necessary explanation of the vital mechanisms".²

The thoroughgoing distinction between property and function, *i.e.*, between tissue-energies and their directed uses, which underlies this fruitful view of physiology and which at the present day is more and more urgently insisted upon, must, nevertheless, be accounted one of the chief obstacles in the way of a clear understanding of life; for it does not fit the qualitative activities and centralising regions of the organism.

It is the purport of the present inquiry to show in what manner the leading misconception just referred to constitutes the central puzzle not only of biology but of philosophy in general.

The self-same stroke, which made contractility disclose itself to Haller as the property of muscular substance, shifted also the

¹ "Lætus exitum video immensi operis : qui ab annis retro triginta et sex maiorem partem vite mee in id unum impendi. Numerosos libros eo fine legi : animalia pene innumera incidi, et mortua et imprimis viva, ut motus animales eorumque causas perciperem," etc.—*Elementa Physiologiae*, Vol. 8th, Preface.

² *Physiologie générale*, p. 6.

other great property of life, that of sensibility, on to the nervous substance. If, in the organism, muscles are the agents of movement, nerves are evidently the agents of sensation. Contractility being exclusively the vital property of muscular tissue, sensibility must be exclusively the vital property of nervous tissue.

Every one is aware that this fundamental distinction of motility and sensibility as physiological properties belonging to different organic tissues is still echoed by the most advanced biological thought of our age. Yet the organic juxtaposition of motion and sensation has been from the beginning, and continues to be, the source of endless confusion and darkness. Indeed, the envious sprites who grudge to us mortals the penetration of the secret of life must have felt jubilant at this tangled discrimination of modern physiology, expressing at once the outermost contrast and the innermost identity of being. The whole ancient riddle of the universe, which had puzzled so many previous generations, was here most succinctly condensed into the slender compass of a single organic filament, moving at one end and feeling at the other. A narrow and definite stretch of viscid material, commencing as a sensitive nerve and terminating as a contracting muscle, is, in fact, all that Physiology offers as its own contribution to the reconciliation of the Ideal and the Real. Impartially judged, this organic representation of the "twofold aspect" has unhesitatingly to be pronounced a *pons asinorum* from the Physical into the Metaphysical; an hybrid monstrosity, wagging, as it were, its tail in honour of the external or objective world, whilst in its upper regions it is saluting with conscious emotion the spiritual realm of inwardness.

This rather ludicrous picture of the current conception of the two great properties of animal life is drawn with no sense of levity. It is earnestly to be hoped that the general biological perplexity concerning this most critical question may, at last, be definitely dispelled. The more we realise the impropriety of physiologically matching motion and sensation, the better it will stand with the future progress of the science of life. The true relation of the two elemental powers of the animal organism has to be accurately determined before we can expect successfully to unravel the wondrously intricate phenomena of vitality.

The entire world of knowledge finds itself divided into two hostile camps, the one siding with Sensation, the other with Motion. The exact sciences alone still manage to keep at least at a distance from the actual scene of contest. Fortunately for the serene composure of their doctrines they lie outside the pale of unavoidable wrangling. For the present they have chosen their definite course, and do not feel immediately concerned in the unabated struggle, by which the two inveterate antagonists

4 *The Dependence of Quality on Specific Energies.*

in the domain of human consciousness are still striving each to assimilate to itself the entire scope of knowledge. A little consistent dodging has thus far effectually availed to lull the scientific mind into the belief or satisfaction that all external occurrences are indeed resolvable into mere modes of motion.

In the presence of organisation, however, we stand at the very spring whence issues forth the double-natured stream of life, involving in its turbulent ambiguity the whole universe of ideas and things ; we ourselves emerging from it a mystic confluence of mental states and bodily doings. Here then, in all reality, is the focus where motion and sensation finally and substantially interblend, and no kind of subterfuge can justify the disregard of the claims of one or the other of the two seemingly reverse phases of existence.

Which is the more fundamental fact in the world-evolution : moving or feeling ? Reduced to its scientific meaning the conflict lies between the quantitative and the qualitative aspect of existence. In its quantitative aspect the world seems to resolve itself into nothing but an objective combination of motions. In its qualitative aspect the world seems to dissolve itself entirely into a subjective series of sensations. How does this strange dualism take rise within the conscious identity of one and the same individual unit ? Is Quality the result of difference in the numerical addition and position of qualitatively equal units, and therefore a mere function of quantity ? Or is Quantity itself some kind of primitive quality, the multiple discrimination of an indivisible qualitative unit ? This precisely is the problem.

In biology the two-faced enigma has already assumed distinct antagonistic expressions. Eminent thinkers and investigators are ranged on one or the other side. Whilst some are contending for *specific energies* in nerve-substance, others are maintaining the doctrine of its *functional indifference*. The former believe in a material, and therefore qualitative, distinction of the sundry regions of nerve-substance. The latter, on the contrary, believe in a material, and therefore qualitative, identity of all its parts.

According to the doctrine of functional indifference the various qualities, *i.e.*, our well-known sensations, are merely due to differences in the stimulating rhythm, to differences, therefore, of motion communicated from outside to the chemically uniform nerve-substance, and the whole complex make-up of our consciousness is, consequently, thought to result from the co-existence and subsequent combination of such stimulated motions. According to the doctrine of specific energies the varieties of sensation are due to pre-existing differences in the substratum, in which they respectively arise, and all their manifold combinations to higher

products are believed to be realised in materially higher, i.e., specifically pre-endowed ranges of nervous substratum.

In the former opinion, if one could remove without injury to the organ the entire viscid nerve-material which, for instance, fills the channels of sight, and could replace it by the viscid material which fills the channels of hearing, or of any other sense, or even with the viscid material which fills the motor nerve-sheaths, there would result no functional disturbance. The same substance, which, in connexion with the organ of hearing reacted in the quality of sound-sensation, would now in connexion with the organ of sight react in the quality of light-sensation. In the latter opinion, the definite position and efficacy of any portion of nerve-substance is entirely due to its specific material composition, and it could therefore be replaced by no other portion whatever.

In the former opinion, nerve-substance is a chemically uniform substratum of sensibility, itself functionally indifferent, and therefore responding exactly in the form of any stimulating rhythm that may reach it, and filling any functional office, to which it is subserviently attached. In the latter opinion, it is a chemically highly differentiated substratum, consisting of cumulative ranges with more and more complex specific energies. And, consequently, the synthesis of sensations, or rather the manifestation of compound sensation as a transient phenomenon in the present, is not a synthesis of stimulated dynamical units or neural tremors, but rather the unitary functional concomitant of a tissue pre-adapted specifically to respond to special modes of compound stimulation. The synthesis is, accordingly, a molecular synthesis pre-accomplished in the functioning organic structure, not one arising at the moment of functional display through the temporary confluence of special forms of stimulation.

The two views are, as every one readily perceives, nearly diametrically opposed to each other, at least in intention, if not in reality, and they evidently touch the vital knot where, in the organic fabric, Quantity and Quality are all but inextricably interwoven.

It is the cause of specific energies against that of functional indifference, the cause of Quality against that of Quantity, which I wish here to defend.

The fundamental question immediately at issue is : Whether the ultimate analysis of qualitative difference in nature disclose as its origin a purely mechanical configuration and co-operation of dynamical units, or : Whether such qualitative difference be not rather based on the specific and organically secured molecular constitution of the functioning substratum ?

Johannes Müller, who, so far as the special senses are concerned,

was the first clearly to formulate the hypothesis of specific energies, unfortunately involved it in the metaphysical discussion about *d priori* faculties. He had, namely, a vague notion that he was thereby investing Kantian transcendentalisms with the tangible garb of physiology. But nothing could have been more remote from Kant's own thoughts than the organic embodiment of any of his *d priori* concepts or forms. His whole system of Transcendental Idealism turns exactly on this point. Hume, with profound sagacity, had pronounced the seeming bond of necessary connexion between natural qualities and between natural occurrences to be of subjective consistency; not, however, *d priori* imposed upon nature, but gradually established, by nature itself, in the perceiving subject. Transcendental Idealism is essentially a gigantic polemical effort against this genetic position of Hume. With Kant the *d priori* forms of pure reason were not endowments or acquisitions of the organic individual; they were, on the contrary, emanations from the "intelligible" Ego, broken rays of the "synthetical unity of apperception," by force of which all manifoldness of experience is assimilated, objectified and ultimately referred to the absolute, super-individual consciousness. I have elsewhere shown that Kant's theory of knowledge is not really, as pretended, a theory of "transcendental" powers, immanent and innate, but that it rests entirely on "transcendent" existence, on metaphysical ontology. All potential and actual energy, in fact all working activity within the entire compass of his intellectual mechanism, is solely derived from the "intelligible" "noumenal," and in no way from the "sensible" "phenomenal" world.

Taking, however, advantage of Johannes Müller's philosophical illusion, the opponents of the hypothesis of specific energies do not hesitate to charge it with being a mere revival of nativism; nothing but the exploded doctrine of innate ideas or forms organically re-expressed. But viewing this question from a more enlightened standpoint, it may be asked: Is not, after all, the entire organism, with its spontaneous exuberance of life and growth, by force of its very presence, the most eloquent and incontrovertible demonstration of every kind of innate faculty, a stupendous assemblage and radiation of nativistic powers co-extensive with our world at large, nay, creators of the same? The only pretext which the advocates of functional indifference can possibly find for their accusation of nativism is to be detected in the vagaries of Phrenology, which system of nescience at last degenerated into the mapping out of all the spacious provinces of conceptualism as bare sinuosities on the outside of the skull, a skeleton nativism of labelled endowments. With much more justice one might retort upon the indifferentists with the

coeval taunt of "*tabula rasa*," an all-efficient yet undifferentiated potentiality, amenable to every desirable requirement and committed to nothing in particular. But this is certainly not the proper ground on which seriously to discuss this momentous question. Only for a moment we had to trespass upon it, in order to disclose the manifold bearings of the problem. As soon as feasible, we will return to biology.

The hypothesis of functional indifference was first enunciated by G. H. Lewes, in his *Physiology of Common Life*, was then adopted by several eminent French physiologists, and, recently, it has been elaborately and independently restated by Wundt in his *Physiologische Psychologie*. J 48

It is certainly a striking incident in the evolution of science that the thoughts of two such universal thinkers and scientific experts as Lewes and Wundt should have so completely coincided in the elucidation of one of the most intricate questions within the entire range of science. Surely there must obtain a necessary convergence of the various trains of knowledge in certain given lines towards the solution of the central problem of modern philosophy—the mutual relation of motion and sensation. The time may not be distant when to the combined efforts of Philosophy and Biology, sensation, the ideal element of our world, will have to reveal its exact mode of dependence on what to the outside observer appears its material substratum.

By accurately formulating the supposed process of that long-deferred ultimate transition of quantity into quality, the hypothesis of functional indifference will undoubtedly render most valuable assistance in the penetration of our venerable enigma, especially as it is presented and defended by men eminent as biological workers and thinkers.

Three scientific aspirations have chiefly co-operated in the construction of the hypothesis: (1) the logical faith in the potency of quantitative science, which, after having subdued to its uniform standard all other regions of externality, is believed to be also competent to conquer the very birthplace of qualitative distinctions; (2) the effort to find a suitable basis for the understanding of the gradual and continuous evolution of the various modes of sensation; (3) the desire to harmonise the nature of the objective stimulation with that of its stimulated subjective effect or issue.

The combined tendency of these aspirations is to show how from the definitely varied configuration of qualitatively equal units the organic groundwork of sensorial evolution and qualitative difference is ultimately secured, and how in this complex organic fabric the stimulating motion, vitally reproduced, harmonises with the original dynamical motion, how, in fact, the

concomitant subjective sensation is essentially but another aspect, a repetition in the sensitive medium, of the outside influence or object.

Before making any attempt to invalidate the correctness and pertinency of the special experiences brought forward in support of the hypothesis of functional indifference, it will be well to probe a little the tenability of its general position.

We will picture to ourselves the manner in which—under the influence of the notion of functional indifference—sensations are conceived to arise in the central regions of the animal organism. It is surmised that in the nerve-substance the stimulating motion, transmitted to it from outside through the assistance of more or less elaborate initial textures, assumes in addition to this its objective form a corresponding subjective form altogether due to the specific nature of the neural substratum; that, in fact, the stimulating rhythm in entering from the dynamical medium into the neural medium, or in causing the particles of the neural medium to vibrate responsively, has now acquired a subjective import, a sensorial potency.

Whence, it must be asked, this peculiar power of feeling now superadded to the peculiar motion, each special stimulated motion awakening a special concomitant feeling? If not derived from extra-organic sources, this completely novel and elemental power, now joined to the motion, must needs be considered an inherent property of nerve-substance. And then it is quite certain that nerve-substance must be a substratum endowed with the specific energy of adding to each special motion a corresponding specific sensation, to each special group or confluence of such propagated motions a specific compound sensation. Nerve-substance, the functionally indifferent, chemically uniform medium, contemplated in this light, must, therefore, be admitted to be pre-endowed with universal sensibility in every one of its parts; to possess, in reality, an all-efficient ubiquitous potentiality of sensation. The sensorial versatility of such a substratum would thus be due not to its functional indifference or qualitative neutrality, but, on the contrary, to the all-sided efficiency of its specific energies. The supposed homogeneous groundwork of sensibility with its pretence to indifference, would, in truth, be everything everywhere, would represent the totality of nature in every one of its constituent molecules, the entire range of sensibility potentially dwelling in each of its structural and physiological elements, subject to the awakening calls of varied stimulation. And, besides, as sensibility is undeniably the medium in which alone the world becomes revealed to us, we should have to adopt the startling conclusion, that this all-sustaining medium of steady and orderly revelation is itself only the in-

different plaything of external motions impinging upon it almost at random.

Organically considered, the assumption of the omnipresence of universal sensibility in nerve-substance appears no less preposterous. Rigorous structural adaptation to the requirements of localised and specialised function is a supreme fact in organic evolution, and it would be passing strange if the nerve-substance inside a motor nerve-sheath, destined, for instance, to stimulate the motions of the great toe, should be molecularly equivalent to the substance which in the corpora quadrigemina ministers to light-sensation, and this again molecularly equivalent to the substance which in the cortex of the hemispheres is the bearer of the most complex modes of sensibility.

The hypothesis of functional indifference rests essentially on the safe general proposition that identity of structure implies identity of property. But it also rests essentially on the very unsafe special supposition that nerve-substance is everywhere identical in molecular structure. The evidence for the structural identity of all parts of the neural substratum is of the crudest kind. It runs thus: Because our morphological and chemical analysis has hitherto failed to furnish any positive proof of structural differences, therefore we are justified in looking upon nerve-substance as identical in all its regions. Now it is an established fact that all functioning material—within the sphere of the ectoderm, at least—appears in its normal, unadulterated state perfectly homogeneous, *i.e.*, structureless to the eye, even when magnified in the highest degree. The hyaline, contractile constituent of muscle is morphologically not distinguishable from the hyaline material which is the substratum of nerve-efficiency. Yet in this unbroken continuity of purely hyaline material, representing the organic medium, which responds to the dynamical stimulations of the universe, there are, nevertheless, molecularly embodied all the accumulated sensorial distinctions and specific motor reactions of our race. With regard to our present skill in physiological chemistry, it suffices to state that only quite recently the most advanced chemists have come to suspect that products of a higher chemical value than food-ingredients are synthetically constructed within the animal organism. Whilst, in truth, the wondrous powers of complex animal organisation, quite incomparable with any unorganised forces, are in themselves decisive proofs of incomparably higher chemical combinations, underlying the same.

In reasoning from the very same foundation as the indifferents, we are, on the contrary, forced to infer the existence of molecularly organised specific energies. For, with the same certainty that identity of structure implies identity of property,

with the same certainty does difference of property imply difference of structure. Nerve-substance evidently displays those specific energies which are called sensations, and it is not difficult to perceive that "specific energy" is here merely the dynamical expression for specific property. We have seen that specific properties are necessarily the endowment of specific molecular structures. Therefore it is quite clear that distinctiveness of specific energies must always involve distinctiveness of molecular structure.

Accordingly, the apparently homogeneous substratum of "neurility" and "sensibility" has to be considered a structure molecularly specified in every one of its sundry regions, or—in other words—nerve-substance is endowed with different specific energies in different definite localities. Even two nerve-fibres conveying the sensory stimulation from two adjoining areas of skin must structurally differ from each other in a marked degree, for their respective activities or energies contain the element of distinction on which the subjective discrimination of the two different skin-areas is founded.

To sum up : The hypothesis of *functional indifference* necessarily pre-supposes a chemically uniform substratum of neural efficiency, endowed with universal sensibility in every one of its structural and physiological elements. On the other hand, our most intimate and immediate experience, that of a manifoldness and complication of qualitatively distinct sensations, clearly implies a structurally varified and graduated substratum, endowed with correspondingly distinct *specific energies*.

If these be indeed the true alternatives, who can hesitate in his choice, and who can fail to perceive the vast physiological and psychological import of the decision ?

In tracing the extreme prospects of functional indifference, I am by no means underrating the force of prevailing scientific doctrines, and the wealth of qualifying opinions, which have concealed them from the penetrating gaze of the original framers of the hypothesis. Indeed, the thorough elucidation of this question involves a radical reform of the entire science of life. For the difficulty which the hypothesis of functional indifference endeavours to overcome is the fundamental difficulty of Biology. It will be well for our present purpose to express it in the most direct and tangible manner. We unmistakably see that the activities of a number of qualitatively equal muscular fibres are combined to joint-effects, *i.e.*, to an exhibition of power which is the combined sum of their individual activities. And we see, furthermore, that the peculiar arrangements and connexions of numbers of such individual fibres render their activities subservient to the most diversified uses, as pulling a bone, pumping the blood, con-

stricting an intestine, &c., and subservient, moreover, to the most complicated vital performances, as walking, manipulating, breathing, &c. Here, then, we have the principle of functional indifference actually demonstrated in nature so far as the contractile substratum is concerned. One elemental property of a single uniform tissue is observed to effect the most varied and complex results by mere grouping of units and manifoldness of connexions.

Now the task which offers itself to analogical reasoning, which would give completeness to Physiology, and which the hypothesis of functional indifference seeks to accomplish, is the rigorous application of this very same principle to nerve-tissue.

We have now plainly designated the entire bent and scope of the subject under consideration. In so doing, we have, at the same time, named the *experimentum crucis* of modern physiology, which science is essentially based on the doctrine of the functional association of elementary units.

In conformity with this universally accepted view, it has to be shown, how in the neural substratum elementary units are grouped and connected so as to yield those complex results which are subjectively known as sensations, thoughts and volitions, and objectively in their motor outcomes as co-ordinated movements, intelligible expressions and directed actuations.

It is highly interesting to notice how the two originators of the requisite hypothesis, whilst fully agreeing with regard to the desirability of fitting nervous processes into the formula of functional indifference, are nevertheless led to construct entirely different images of the supposed grouping of neural units, the one thinker following thereby chiefly the glimmerings of psychological, the other those of morphological experience.

Lewes assiduously removes every textural obstacle, in order to establish a homogeneous fluid of sensibility, filling all neural channels. To him this vital fluid constitutes a *sensorium commune*, ever astir with the universal feeling of blended tremors from all points of the organism; a sensitive foil of stationary waves, on which every special change is impressed as a modification of the entire preceding state, rendering it a fluctuating unity of sensations, of which only under favourable conditions some special conformations gain the height of conscious realisation.

Wundt carefully follows up structural forms and connexions, and, finding everywhere the same simple textural elements attached to very different organs and endlessly reproduced in most diversified central configurations, he infers that difference of sensorial experience can only be due to difference of structural connexion, and that synthesis of sensorial experience can only

result from the consensus of the elementary activities of grouped textural units.

Surely it is the "philosopher's stone" of our age, so to wield quantitative arrangements that therefrom may arise the great magisterial essence—Quality. It is from co-ordinate multiplicity that science is striving somehow to extract the incommensurable sensorial effluence that forms our psychical aura, and nervetissue is the ultimate local recess where, if ever, there has, at last, to take place that glorifying transfiguration from outward uniformity to inward diversity, and from separateness of elementary activities to all-comprehensive unity of being.

I think it will be hardly denied in principle by any biologist of the present day, that the vital activity of any kind of organic tissue is due to a manifestation of its own inherent energy, and never directly to the manifestation of any energy applied to it from outside.¹ This is what Haller proved with regard to muscle and nerve, and it is, in fact, essentially all that is implied in the recognised doctrine of stimulation and irritability. Outside influences only set going activities, the energy of which has been organically composed and gathered within the performing structure, and they do not themselves directly enter into the composition and nature of the vital exhibition which they merely initiated. In the framing of any hypothesis concerning vital processes, it must therefore never be forgotten that vital energies are in all instances the indwelling property of the living tissue by which they are manifested, the external forces playing functionally only the part of excitants. And it is easily seen that this unexceptional physiological state of things means exactly that it is the energies residing in the living structures which are specific, whilst their stimuli must in every case be looked upon as *comparatively* indifferent. Mechanical, chemical, physical stimulation, one and all, excite essentially the same contraction in the muscle, the same molecular change in the nerve. This, however, does not exclude that special tissues or regions have come to be most subtly adapted to special modes of stimulation. It only shows that at any given moment the liberated energy in the stimulated structure is entirely inherent and specific. Whenever certain features of the stimulating motion are found to be reproduced in the vital motion, then the organic substratum in which the corresponding change occurs has to be considered pre-adapted to the stimulating medium. The feature which the two motions have in common is in all such cases co-existent

¹ The conception, current in some quarters, that muscular power is derived from the combustion of food-ingredients is altogether unphysiological and fundamentally erroneous. This I have explained in the *New York Popular Science Monthly*, Sept. and Oct. 1878.

and permanently fixed in the tissue and in the medium, and is never in the former the mere temporary effect of special stimulation. The specific adaptation of organic structure to special modes of stimulation is therefore a problem of structural evolution, and not one of immediate and efficient causation.

Indeed, Lewes as well as Wundt virtually yield the entire argument, when they expressly admit that nerve-tissue is apt to become by frequent exercise pre-disposed to certain specific modes of reaction; so that, for instance, even artificial stimulation will prove efficient to awaken through the optic nerve light-sensation. If indifferently, or rather universally, endowed nerve-substance can under normal conditions become so modified as to manifest in its own exclusive self a specific or one-sided energy, then it is evident that in the course of time the one-sided disposition will be converted into a preponderating property; that, indeed, after many successive generations of steady exposure to the same modifying conditions, the respective tissue will have become the organised representative or substratum of this very same one-sided or specific energy. This is, in fact, the general law of organic differentiation, and it certainly must find its supreme application in the sphere of centralising sympathy, where the manifold differentiations of the organism are finally represented and discriminated. Nerve-substance, by means of its decided and multiform structural modifications, constitutes essentially the substratum of organically secured qualitative distinctions.

One more consideration for the sake of completeness. The molecular process in nerve-tissue is, like all other vital processes, one of decomposition and recombination, *i.e.*, one of functional discharge and subsequent functional restitution. Now a chemical process is in all instances directly and rigorously dependent on the nature of the combining or separating substances, and only indirectly and loosely dependent on the nature of the dynamical medium. These obvious conditions must apply pre-eminently to a most complex compound, the very existence of which is altogether determined by the preservation of its identity of structural composition amidst an incessant flow of chemical change. The specific molecular processes which constitute the functions of nerve-substance must, therefore, be essentially due to its own inherent efficiency.

Continuity of development would seem to desiderate some primitive sensorial element, of which all existing sensations are but modifications or combinations. A postulate of the kind may be valid to some extent in the sense that it has always been a portion of one and the same common protoplasm that has become elaborated into the substratum of specific sensations, but

it can in no way be valid in the sense that some fundamental sensation has itself become gradually developed and differentiated into the various specialised modes of sensation.

Touch has, to all appearance, to be looked upon as the most fundamental of our senses, unless, indeed, taste, the chemical food-test, the original complement of restitutive nutrition, be still more primitive. Sight, however,—to take an extreme instance—is evidently not evolved from touch, but rather superimposed on it. For it is not likely that functional adaptation to an ethereal stimulus has grown out of functional adaptation to the incomparably coarser stimulation which actual contact with surrounding objects affords. More plausible would be the derivation of sound-sensation from touch, but this also is, for various reasons, problematical. It would be hypothetically consistent to think of light-sensation as evolved from primitive modes of stimulation by solar or radiant energy, which supposition would point to the existence of separate structures through which temperatures are felt and discriminated.

In searching for a quantitative foundation of Quality, it might furthermore be surmised that difference of sensorial quality is based on the frequency with which neural tremors occur in the nervous substratum, 19·5 tremors in the second being, for instance, efficient to tetanise a muscle, whilst 20,000 tremors would give rise to sound-sensation, and so on. But it must be remembered that the power of the organic structure numerically to reproduce the dynamical medium-vibrations is a vital energy entirely dependent on the peculiarity of its own molecular composition. The substance whose property and function it is to accomplish 20,000 vital vibrations in the second, must differ essentially in molecular constitution from the substance whose pitch of functional vibration is only 19·5.

Now we have arrived at the one celebrated experiment which is generally brought forward in support of the material identity of sensory and motor nerves. This experiment was first performed by Philippeaux and Vulpian, and has since been verified by various observers. It consists in producing a mixed nerve by first dividing both the motor and a sensory nerve of the tongue, and then allowing the peripheral end of the motor nerve to grow together with the central end of the sensory nerve. By this union an artificial nerve is established, having a central half formed of an originally sensory nerve-portion, and a peripheral half formed of an originally motor nerve-portion. If the originally sensory portion of this ambiguous nerve be pinched anywhere along its course, the animal experiences not only pain, but, at the same time, movements are induced in the muscles of the tongue. The mixed nerve conveys evidently impulses both

ways, and the same stimulus excites centrally sensation and peripherally motion. Thus far the experience is undeniable, and it is this actual state of things which is so forcibly adduced in proof of the identity or functional indifference of nerves. Apparently one and the same nerve is here observed to excite either one or the other effect according to the nature of the organ with which it is connected, a motor organ reacting in the form of a contraction, a sensory organ in the form of a sensation. It seems, therefore, that the nerve itself is neither motor nor sensory, but functionally indifferent.

We will presently see how extremely difficult it is to contrive decisive experiments with living tissues. We know that almost any kind of stimulus applied to a muscle will induce contractions. Even an electric shock conveyed through a nerve which happens to be merely in contact and not at all in structural continuity with a muscle, will induce contraction in the same. So coarse a disturbance as the one caused by pinching will readily be propagated even through very imperfectly regenerated nerve-structure, at least in a degree sufficient to excite contraction in the adhering muscle. That the nerve is very imperfectly regenerated, or rather very unequally endowed with conductive power, is proved by the fact that no pinching of the originally motor portion will cause pain. This is all the more significant when we remember that in Paul Bert's experiment with invertedly grafted rats' tails pain is already experienced after a few days, though it takes many months to accomplish by regeneration the complete inversion of normal tactile sensibility. Surely there must exist in the mixed nerve some impediment due to the originally motor nature of its pinched portion. How could otherwise this coarsest kind of stimulation fail to reach the central organ? It seems that the neural process in a motor nerve is not only incapable of stimulating central sensory organs, but incapable even of stimulating sensory nerves. The experiment under consideration demonstrates therefore rather the opposite of what it was intended for. It shows that a sensory nerve is, under certain conditions, efficient to stimulate a motor nerve, whilst, under the same conditions, the motor nerve proves inefficient to stimulate the sensory nerve. There must, therefore, exist a pronounced difference between the two kinds of nerves.¹ The lingual has not become a motor nerve,

¹ Perhaps the correct explanation of this somewhat paradoxical relation between lingual and hypoglossal may be found in the simple circumstance that the lingual contains in itself motor fibres derived from the facial. It may be these chorda fibres alone through which motor conduction is established. This, however, would also demonstrate a specific difference of the nerves implicated.

for it does not convey normal motor stimulations. The tongue remains paralysed. Neither volitional nor reflex influences are propagated. The hypoglossal has not become a sensory nerve, for it does not even excite pain, much less a specific sensation. Nor has the mixed nerve become functionally indifferent. If, however, any of the two former suppositions were actually realised, it could only occur by means of a thorough regeneration. The fact that it takes many months to establish reverse tactile sensibility in a rat's tail, when a few days suffice to organise the necessary conductibility for the stimulation of pain, affords an additional proof of the specific organisation of nerves. To form a conception of the vast and subtle powers at work in the achievement of this sensorial reversion, we need only consider that Legros has witnessed in much less time the regeneration of the entire tail in hibernating individuals of the same family.

In confirmation of a specific difference obtaining between sensory and motor nerves, there might be urged, first, their different mode of dying when poisoned or when deprived of nutriment; but these peculiar phenomena may be differently explained, which renders them uncertain for our present purpose. Secondly, might be urged the different rate of velocity with which they apparently convey impulses; but the subjective factors of attention and practice enter into the measurement of sensory conduction, and make the subjective result problematical.

X The truth is, there exist no decisive experiments either one way or the other. But from general laws of vital activity it follows with great certainty that impressions from the outside world, transmitted with all their specific distinctions to the nerves through the agency of minutely appropriate organs of sense, have in this transfigured form to be propagated with all their characteristics along single nerve-fibres till in the central organs they acquire combined and sentient values. The power of thus responding by consentaneous molecular changes to the special and multiform variations of the external influences is a power gained by nerve-tissue through most specific local adaptation to special modes of stimulation. This adaptation can be reached only through the thorough structural fixation of a consonant molecular constitution, and is evinced by the display of corresponding specific energies.

X It is in this manner that the congruity of the dynamical stimulus or objective influence with its vital reproduction or sensorial representation has to be physiologically conceived. It is by the creative outburst of organised energy, and not by mere passive receptibility, that nerve-tissue becomes the medium of our world-revelation.

II.

All preceding reflections have been merely preparatory. Now, however, we come to the pith and marrow of this knotty question.

Physiologists of all schools are agreed that the specific molecular processes that normally take place on stimulation in the well-known organic structures called sensory nerves, are to be looked upon as the elements of that peculiar activity of which somehow our coherent sensorial experience is built up. No one doubts that the chemical or—as some will have it—the physical motions, started in the sensory nerve-elements at their peripheral end and propagated through them to the so-called nerve-centres, are themselves phenomena necessarily connected and concomitant with feeling. In fact these motions in the substance of elementary nerve-structures must evidently be the objective expression of the same process which in its subjective aspect constitutes the elements of sensation. It is then unmistakably the inherent property of sensory nerve-elements to manifest on stimulation the elements of our sensorial experience. Thus far we can distinctly trace the material complement of feeling, morphologically and physiologically. We can see where, and also to some extent how, in the organism the elements of feeling arise. But now comes the puzzle. It is, namely, clear beyond suspicion that our sensorial experience is not made up of a mere mosaic of elements; that it, on the contrary, consists of a complex unity, of a confluence of thoroughly integrated energies. Somehow and somewhere in the organism there must, therefore, be accomplished a compounding and recompounding of sensorial elements.

The great problem is to gain an understanding of the means by which is actually realised this evident synthesis and integration of elementary neural activities.

This is precisely the task which the hypothesis of functional indifference has taken upon itself. It attempts to point out how neural elements are grouped and connected so as to produce complex results, so as to manifest compound sensations. I have already stated that in the endeavour to extract quality from quantity consists the "philosopher's stone" of our age. Following the mighty sway of quantitative science, who knows how many centuries might, this time also, elapse in the vain pursuit? We will strive to liberate ourselves from the engrossing spell by seeking for a solution in other directions.

To bring the occult properties and functions of nerve-tissue somewhat within reach of our comprehension, it will be well to compare them with the more obvious properties and functions

of muscular tissue. And, as nerve-tissue becomes fully developed only in the highest animal organisms, it is their muscular arrangements that have to be consulted for corresponding information. We will endeavour to find how, by the grouping of elementary units and by their organic connexions, complicated results are achieved in the sphere of Contractility. We shall then be in a position to judge whether analogous conditions can possibly obtain in the domain of Sensibility; whether the elementary constituents of nerve-tissue are also actually so grouped and connected as to accomplish, by force of such local arrangement, the compound effects attributed to them.

This mode of elucidating so intricate a subject as the one under discussion will be found all the more appropriate for the reason that, knowingly and unknowingly, the visible phenomena of muscular activity govern at the present time the interpretation of the invisible phenomena of neural activity.

It is essentially by dint of their contraction that muscular elements produce their objectively tangible effects. A multitude of contractile units, by joint-action, and by being all connected, for instance, with a single tendon, will pull at the same, and will bring about a dynamical effect which is undoubtedly the resultant of their combined individual energies. We have here, so far as the mere external effects are concerned, nothing but a purely mechanical problem before us. No matter that it is an organic energy and a vital molecular process which give rise to these dynamical results; the force acquired by the tendon is, nevertheless, strictly the mechanical product of all the individual contractions manifested by the co-operating vital elements. Such, at least, would be rigorously the case if the tendon itself consisted of molecularly rigid material. At any rate, the movement of a tendon is essentially mechanical and not vital; it is imparted from outside, not intrinsically awakened. The contraction of the muscular fibres is also a purely mechanical occurrence, a mere forcible shifting of mass in space. But it is based on a molecular process in the moving elements which is not itself the resultant or equivalent of external forces, which, on the contrary, is the intrinsic display of accumulated and organised energies. It is a vital process which here underlies the mechanical result, a process the energy of which is stimulated and not communicated.

What, it must further be asked, is the *conditio sine qua non*, which enables a multiplicity of moving elements of any kind to combine their individual activities in such a manner as to produce an *adequate* joint-effect of the mechanical order? They must evidently exert their force in the same direction on one and the same continuity of external substratum, which sub-

stratum has to be itself molecularly rigid, though perfectly movable in space as a coherent mass. In the organism these conditions are never exactly fulfilled. But, on the whole, tendons are to muscular fibres, and bones are to tendons, combining recipients of mechanical energies. A medium of composition is indispensable to the summation of energies. To realise the complete dependence of mechanical resultants on a combining substratum, one may fancy for a moment all the individually contracting muscular elements severed from their attachments. They might then still be capable of contracting with the same energy as before, yet no co-operative result would be accomplished. The medium of dynamical combination would be wanting. The multiple energies, singly exerted on no common recipient, would lose themselves in entirely isolated and disconnected efforts. These last remarks will probably appear to most readers superfluous, and they would certainly deserve to be considered so if we were not here treating of physiology and psychology, which sciences deliberately aim at the monstrous feat of making "two and two" constitute "four" without the help of any kind of synthetical medium.

Besides molecularly rigid and freely movable masses there are other, though less adequate, media of dynamical synthesis. The combining medium may be a rigid solid, immovable in space: or it may be an elastic solid, movable or immovable. It may also be a more or less molecularly disentangled fluid, elastic or inelastic; movable or immovable in bulk. In all these cases the kind of matter of which the combining medium is composed begins to assert its influence. It is not alone the quantity of substance, but also its quality, which now enters into consideration. The perfect mechanical result is marred by the intrusion of specific physical properties. The resistance to be overcome by the external forces cannot be measured simply by the uniform standard of mass. The different molecular forces of the sundry kinds of matter exert a power of their own, which has to be taken into account. Yet, as the sum of the molecules makes up the mass of the body, as during the dynamical changes the molecules remain themselves intact, and as the specific molecular forces are taken as uniform throughout, there still persists under these physical complications a calculable relation between the moving forces and their mechanical result.

But the recipient of external impulses may also be a chemical medium, *i.e.*, a substratum atomically more or less unstable. Or it may be a vital medium, *i.e.*, a chemical substratum alternately explosive and restitutive. In these latter instances the relation between the impelling forces and their mechanical result becomes exceedingly obscure, and generally altogether

ncalculable. Vast and most specific activities, potentially pre-existing in the composition of such chemical and vital substrata, are set going by the external influences, and obliterate, by the overwhelming power of their own intrinsic display, the traces of mechanically transmitted action. Here it is mainly the kind of matter which determines the value of the excited commotion, and its total mass or number of molecules merely multiplies by so much the specific effects.

It is clear that such almost self-acting substrata, in which peculiar internal energies have complete sway, are unfit for the dynamical composition of propagated impulses. Dynamical laws, though strictly applicable to all mechanical results of vital activity, are in no way applicable to the vital activities themselves. The contraction of a muscle, for instance, is a purely mechanical event, but the atomical process on which it is dependent is by no means itself a mechanical event. The potential energy accumulated and liberated in the contractile substratum is pre-existing, intrinsic and specific, and therefore dynamically incalculable. In vain are scientists attempting to find a measure for muscular power in the units of heat evolved by the combustion of muscle or food-ingredients. The power of muscle rests entirely on its evolutionally ingrained affinities, and not in the burning of any transient material. It is obvious, then, that a vital substratum, a substratum stimulated to vital activity, cannot possibly form a medium for the dynamical combination of the stimulating impulses. If, nevertheless, a synthesis of stimulating energies is found to occur in any vitally reacting tissue, then it must certainly be accomplished by means altogether transcending the modes of mechanical operation.

It is my present endeavour to explain how the synthesis of specific energies is in reality accomplished in the animal organism, how sensations are organically compounded.

For the sake of completeness, we have to enumerate one more synthetical medium. It can namely be hypothetically conceived that the combination of a multiplicity of energies may find its realisation in some metaphysical substratum, in which instance quality is supposed to manifest itself, not as a specific structural energy, but as something having its subsistence in a hypervital and hypersensible sphere.

We are now clear about the means by which the energies of contraction, manifested by a number of individual muscular fibres, are combined to a joint mechanical effect. We can furthermore easily perceive that the direction, sweep and velocity of the resulting motion is to a great extent conditioned by the peculiar arrangement and definite mode of attachment of the contracting fibres, and conditioned also by the peculiar posi-

tion and definite mechanical enchainment of the textures moved by the attached fibres. In the motor system we have before us a complex mechanical instrument, which, within certain definite limits, admits of an endlessly varied and modulated dynamical play. This living instrument is constructed, is, evidently, somehow organically preconcerted, for the achievement of certain definite dynamical results, which results are to be wrought upon a given external medium—a medium, however, incessantly shifting and changing according to laws only intrinsic to itself. There are, then, besides the physiological problem of the generation of mechanical energy by vital processes, two other distinct problems which are here offering themselves for solution, *viz.*, the apparently teleological problem of the construction of the instrument, and the apparently metaphysical problem of the playing of the instrument.

The great and as yet unsolved mystery of the shaping and adaptedness of the mechanism does not at present concern us. But it falls to our immediate task to have to inquire somewhat into the synthetical power of the nervous centres, to seek to catch a glimpse of the hidden influences that so effectually play the instrument. Whoever wishes to form some idea of the significance of nerve-centres, even so far merely as the concordant actuation of motor performances is concerned, need only imagine all motor nerves severed from their central connexions but retaining their vitality. Now it may be conceived what exceeding foresight and myriad-fingered skill would be required so dexterously to tap the severed nerve-ends as to mimic, by means of this artificial mode of stimulation, the normal action of the nervous centres on the organs of motility.

Surely the central mass of organised material which lies between the individual inlets of sensory nerve-elements and the individual outlets of motor nerve-elements must either be itself marvellously endowed with compound specific energies, or it can be merely an instrument for the transmission of neural tremors to some hypervital medium, in which compound sensory rhythms are sentiently realised, and from which compound motor rhythms are effectively issued.

Synthesis somewhere occurs, most complete synthesis of all elementary neural activities; sensory synthesis till the most collective thought is shaped; motor synthesis till the most comprehensive volition is consummated. We desire to know where and how these highest feats of life are accomplished. But this time the question is not: "How are synthetical judgments *a priori* possible"? The question is: "How are synthetical sensations and volitions organically possible?" Until this is positively answered, until we have gained an

insight into the organic fixation of sensory and motor compounds, the very keystone of science and philosophy is wanting. Our knowledge consists merely of the outstanding supports, and there remains a central void in the grand triumphal arch of our understanding, filled as yet with nothing but vague picturings and hazy concepts.

Keeping still only the motor side of the ectodermic arc in view, it would but little avail if the final desideratum of the mechanical school were actually fulfilled, if there existed in reality an ever so complete and exhaustive network of direct and definite intercommunications between the sensory elements and the motor elements.¹ In an apparatus of this description the motor impulses would be received directly from sensory elements, and the motor instrument would then evidently be played exclusively by the external forces which stimulate the peripheral origin of these sensory elements. The spread of the motor effect would be in some degree proportionate to the intensity of the stimulation ; but the vast store of consciously and unconsciously interposing experience or memory, generical and individual, would, under such conditions, count for nothing whatever. Movements would cease to be in any sense voluntary. Indeed, they would be at least as rigorously determined by outside influences as our direct sensations are felt to be. The motor system would represent a subtle mechanism, solely

¹ It must be acknowledged to the great credit of observers, especially German observers, that in this supreme and crowning task of textural analysis they have stoutly resisted the fascinations of imaginary histology. When one considers that the present conception of nervous activities rests chiefly on the assumption of direct intercommunications between sensory elements with other sensory elements, between sensory elements with motor elements, and between motor elements and other motor elements, one may well feel proud of the scientific self-control of the men who, under the most alluring conditions possible, amidst crowds of seemingly favourable appearances, have nevertheless repressed their own personal bias, in order to record with vigorous precision the overruling teachings of nature.

Perhaps there is still a little too much reliance placed in the morphological appearance of artificial preparations. But in this respect also immense progress has been made since the old Würzburg and Berlin days, when it was thought necessary to macerate and to cook tissues in strong acids, alkalies or spirits, for the purpose of forcing into view their hidden textual secrets.

Some microscopical philosophers profess an implicit faith in the discriminative powers of carmine, and practise extensively the histological rite of rubricating life-inspired dots. They believe, namely, that certain reddening particles are entrusted with the sad mission of erecting under self-immolation Death's sanctuary in the shape of animal brain and muscle. So mortifying and mortified a conception of vitality defunct is evidently intended to give timely warning to us all, not that we have sooner or later to die, but that we are already dead. Great are the revealing gifts of carmine !

actuated by momentary impulses, impinging upon its recipient points almost at random. It is hardly necessary to waste many words in contesting a view so utterly at variance with nature. We are unhesitatingly certain that our movements are not exclusively directed and controlled by the peripheral stimulation of sensory elements. In shaping our actions we are not slavishly executing the immediate promptings of our actual environment; but, on the contrary, we are ever drawing from a well-assorted fund of pre-established resources, deep, old and unfailing as life itself. This is so palpable a truth that no serious doubt concerning the same has ever gained, or can ever gain ground. No wonder, then, that we are anxious to learn something more definite about this grand reserve of slowly accumulated power, which is so constantly and intricately intervening between external stimulation and muscular reaction, between sensations and volitions.

In examining motor activities, we have become aware of the principal problematical points connected with their composition. We had, above all, occasion to distinguish between the composition of contractions and the composition of innervations. We found that the synthesis of contractions is essentially of a mechanical character, whilst the synthesis of innervations seems, on the contrary, to be, somehow, actuated from a metaphysical position.

Now we will turn our attention to the sensory side of the ectodermic arc.

It makes no material difference in the following argument whether the effects of stimulation, transmitted through the single nerve-fibres to the nerve-centres, are thought to be peripherally acquired during function, or whether they are believed to be merely intrinsically re-awakened: the effects themselves are any way admitted to be specifically sensorial and of an elementary nature. This granted, a very obtrusive, yet altogether unsolved, question at once urges itself upon our consideration. It may be thus plainly stated: "How and Where are the objectively traceable elements of sensibility combined to higher products?" With the subjective side of the products we are immediately and intimately conversant. Our consciousness is filled with them. Indeed, compound sensations are the stuff of which our world of consciousness is wholly made up. But, in objectively following the substratum of sensibility, *i.e.*, the sensory nerve-elements themselves, to the place where they all converge towards one common centre, they seem there to terminate singly, to come to an isolated end. It is highly significant that, contrary to their theoretical expectations, the most accurate observers have hitherto failed to discover any direct

central intercommunications between sensory elements. Psychologists, leaning on second-rate histology, have nevertheless very generally assumed such connexions. But, even if the normal existence of central sensory anastomoses were a well-established fact, it would render no assistance in the penetration of the mystery by which we are here confronted. The puzzle of sensory synthesis would be as great as before.

We must no longer refrain from unshrinkingly facing the extreme functional issue on which the fate of modern physiology is destined to turn. The composition of vital phenomena by the functional association of elementary units is the fundamental axiom on which modern physiology is based. How, then, are the compound effects of the many and disparate activities of sensory elements actually realised? This undoubtedly is the decisive question.

No difficulty was experienced in understanding how the individual energies of muscular fibres are dynamically combined in tendons and bones. In the sensory sphere, however, there exist apparently no combining media. Indeed, as the neural process in the central termination of sensory nerve-elements is exclusively of a chemico-vital nature, without the exhibition of mass-motion, it is clear that a medium of mechanical combination would be here entirely out of place. How, then, are the divers specific manifestations, occurring within the secluded compass of the sundry sensory elements, combined to joint-results. If we had before us a hundred iron balls, or a thousand of them, grouped in whatever manner; if these balls were now all heated, equally or unequally, but each separate ball protected against the diffusion of its heat; could there possibly occur in such a system of isolated balls any sort of compound calorific effect? By force of their indwelling vitality and acknowledged individuality, neural elements represent such isolated balls. Their functional discharge is due to forces accumulated and liberated within their own substance. The peculiar vital phenomena connected with the functional discharge must therefore remain entirely confined to the limits of the performing substance. No heightening or composition of vital effects through the simultaneous action of ever so many isolated vital units is at all thinkable. This we have already illustrated by imagining the muscular fibres severed from their attachments. Their individual contractions can then accomplish no joint-result. Nerve-elements do not even manifest contraction. All their energy is spent in inward commotion. Where, then, it must be asked, do these inward commotions join and chime?

An answer, but, I think, a very evasive and superficial one, is offered. It is, namely, universally assumed among physio-

logists that the separate activities of sensory elements are compounded by means of yet undiscovered textural intercommunications between the various elements. This is exactly as if anyone were to maintain that a compound of the separate feelings experienced by each individual during the passage of an electric shock through a chain of persons existed in reality somewhere outside or inside the group of affected persons. It is, however, quite certain that each individual unit merely reacts by force of its own inherent capacity. The vital effects of the shock remain entirely confined to the sundry individual organisms, and do not pass from one individual to another to appear somewhere as a compound result of all the individual manifestations. An ever so large number of simultaneously affected units will not intensify or multiply the result by one jot. This principle of isolated function is not much more difficult to comprehend than the allied principle of isolated conduction, yet when fully appreciated it will completely transform biology. For it is the cardinal mistake of our present science to expect intensified and qualitatively compound results from the co-operation of functionally associated units, unaided by any synthetical medium.

To believe that the individual activities of any number of sensory cells, however significantly grouped, can ever result in a common consensus, in a blended feeling of these activities, is to believe in metaphysical effects. To believe that such elementary activities, individually exerted, can ever constitute higher synthetical products, is to believe in metaphysical creations. There can be no synthesis of separate energies without a medium of composition. There can be no synthesis of qualitatively disparate energies without a medium in which such qualitative combinations are structurally realised.

I will magnanimously refrain from picturing the grotesque outcomes of the supposition of a hypervital medium of sensory and motor combinations. I will merely point out the solution of this central enigma, a solution clearly indicated by the logic of biological principles. I was, however, not so fortunate as to discover it by the convenient process of deductive reasoning. It was the diligent study of the living substance of morphologically unorganised beings, uninterruptedly pursued for years, that first led me to assume by way of analogy, also in the most complex forms of life, a homogeneous substratum of highest vital activity. Such a substratum would constitute a proper medium for the composition of specific energies, a medium in which the combined value of sensory elements has ever been, and is still being, molecularly established. Manifold physio-

logical and psychological considerations have since added strength to this empirical inference.

Even strict logical consistency would desiderate such a synthetical substratum. If, namely, sensory activities of an elementary kind are found to be molecularly realised in certain structural regions, then surely the combined or blended resultants of such elementary activities must also exist molecularly realised in certain more central regions, where numbers of sensory elements ultimately lose themselves in one common medium. If it is the substratum of nerve-elements which gives sensorial value to the stimulated commotion, excited from outside, then surely it must be some similar, only much higher, substratum which gives sensorial value to the combined energies of these elementary stimulations. If it is at all due to the inherent molecular constitution of the material filling the sensory elements that a sensorial import is imparted to the stimulating rhythm, then surely it must also be due to the inherent molecular constitution of a material occupying central positions that a complex sensorial import is imparted to combinations of stimulating rhythms. These reflections, however consistent apparently, would amount to very little, indeed to nothing, if the desiderated substratum were not actually there, *in situ*, just where needed. Sensory elements all terminate in reality in a large mass of homogeneous material, and motor elements all emerge from the same coherent substratum. Only theoretical prejudices, arising partly from a blind faith in the tenets of the cell-theory, partly from the strangeness of attributing highest functional activities to morphologically unshaped material, have hitherto prevented physiologists from acknowledging the neural efficacy of the substratum which in all reality accomplishes the structural intercommunication between the sensory and the motor systems, and in which the compounding of elementary nervous activities must inevitably occur. Isolated opinions, prompted by considerations of a different kind, have from time to time pronounced in favour of the neural nature of Neuroglia. But among physiologists in general this structural climax of all organisation, instead of being esteemed the precious embodiment of nerve-essence, is looked upon as mere nerve-cement. I venture, however, to state that no candid histologist, versed in the examination of unadulterated and untortured tissues, would insist on the accepted connective-tissue-nature of neuroglia. Even its granulated appearance is a *post-mortem* occurrence. Indeed, chemistry has already succeeded in demonstrating essential differences between unmistakable connective-tissue and this morphologically unquestionable central substance.

Some observers maintain that almost the entire neuroglia is

composed of a network of intercommunications between nerve-elements.¹ Meynert, however, has pointed out that the neuroglia cannot possibly be the exclusive product of textural intercommunications, as it relatively preponderates in animals in which fewer nerve-elements are present.

Unless the conception of inherent sensibility be altogether abandoned, Neuroglia will henceforth have to be considered the medium in which the synthesis of elementary neural activities takes place. This supreme synthesis can, however, be accomplished only by means of organised specific energies, by means of a structural composition, in which the compound value of the sundry elementary activities is realised.

This momentous conclusion follows, as has here been shown, very naturally from already well-established biological principles. But, as I have said, it was first attained by me as an empirical corollary of vital manifestations discovered in protoplasm. I believe its recognition forms part of a view of life far more intelligible and profound, both physiologically and psychologically, than the views generally accepted.

III.

I owe one more explanation before this chapter of my great theme can be satisfactorily concluded.

Like many other writers, I had to assume throughout an exact concomitancy between sensory energies and the chemico-vital process occurring in certain neural structures. This

¹ There is current among histologists an ultra-mechanical view of ectodermic life, which deserves some notice. Max Schultze, one of the most accurate observers of unadulterated tissues, thought he had discovered a fibrillous composition of the so-called nerve-elements, nerve-fibres constituting vast bundles of primitive fibrils, and nerve-cells representing mere stations of redistribution instead of synthetical organs. The meshes of Gerlach's central network would thus consist of dishevelled primitive fibrils on their way to form direct communications near and far. The elements of the ultimate sensory network would only have to be continued into the elements of the initial motor network in order to complete the desired mechanism. The ectoderm would thus consist of a system of centrally tangled filaments, immeasurably slender, and stretching in unbroken continuity from the peripheral points of stimulation to the innervated organs.

I have never felt inclined to accept the genuine fibrillous composition of nerve-elements. Though I have not succeeded in gaining a view of living central nerve-cells, I have seen under the microscope the entire vast contents of still living muscular fibres of insects transformed in an instant into an exquisite fibrillous structure, of which the composing fibrils were immeasurably slender. The question, however, is definitely decided by Boll finding in torpedo, the very object to which M. Schultze attached most importance, the nerve-cells and fibres decidedly granular and not fibrillous; fibrils only appearing as a *post-mortem* change.

peculiar coincidence of sensation and motion in time and in space, forms, however, so strange a correlative event that it is felt by all thinkers to require some further elucidation. Indeed, even in the light of a two-sided phenomenon it constitutes a dualism which, with all the present pressure towards monism, has not yet been made to yield.

This burning question of inwardness and outwardness, of subjectivity and objectivity, has been so often darkened by volumes of subtly-woven words that the briefest and most matter-of-fact explication will perhaps prove all the more appropriate.

We imagine again our ectodermic filament in which the sensory-motor enigma rests incorporated. It begins as a sensory nerve, and ends as a contracting fibre. Only we find interpolated at some part of its continuous course the synthetical substance, the neuroglia. On stimulation there are intrinsic motions started at the peripheral end, and propagated along the entire stretch of its material. However much the motions may vary in kind in the different parts of the filament, they all partake of the same motor nature, they are all motions of some kind. They are all really perceived as such, or, at least, conceived as actually occurring. This fact, critically considered, means that the chemico-vital process taking place anywhere in the filament is capable of awakening in a spectator the feeling of motion. The motions thus perceived by an outside observer are clearly special kinds of feeling aroused in him by special kinds of stimulation. The stimulating power is the power emanating from the filament; the stimulated energy, *i.e.*, the movement perceived in consequence, is, however, a power called forth in the spectator. It is the display of a liberated force pre-existing in him. Now, it happens under certain very definite organic conditions that the same energy which emanates from the neural process of one organism and which stimulates another organism to the feeling of motion,—it happens that this self-same energy is also being felt in some specific manner by the organism in which it arises. For instance, the chemico-vital process occurring on stimulation in the optic tract of some animal would, if made accessible to sight, be perceived by an observer as a molecular motion of a particular kind, whilst at the same time the organism in which the process occurs would itself experience some optic sensation—colour, extension, and so on. The same process, which under peculiar conditions may mean immediate sensation to the organism in which it takes place, has also the power of immediately awakening sensations of motion in other organisms.

I must confess that, surveying the field all round, I am at a loss to detect anywhere a trace of the dualism so emphatically recognised by the scientific philosophers of our time. The entire

sphere of experience is wholly made up of sensations, only sensation sometimes in one sentient focus and sensation sometimes in another. That which is sound to my hearing may be motion to my sight, or to the sight of some other being. But motion and sound are both alike sensations of some organism.

The power of stimulating sensations is co-extensive with the outside world at large. The power of experiencing sensations is restricted to the sentient foci of animals. But the molecular constitution, which renders a tissue sensitive, and at last sentient, is the result of gradual development, by which fact is indicated that the peculiar potency which, fully developed, discloses itself as sentience must also be possessed in inferior degrees by the entire molecular scale that, by evolutional elaboration, has led up to the compound, representing the substratum of complex sensation.

Sensations, in one sense, are all objective, for they are all stimulated. In another sense they are all subjective, for they all occur in individual organisms. Only there exists a broad distinction between sensations attuned to stimuli emanating from sources outside the feeling organism, and sensations attuned to stimuli arising in tissues forming part of the feeling organism.

The individual organism is everywhere the centralising and realising agent.

The current of knowledge has hitherto been from the inorganic to the organic. The cultivation of the science of inanimate nature has led to a more complete understanding of the phenomena of vitality. In future, the current will be reversed. Inorganic nature will receive a deeper significance through the application of laws derived from the study of organic nature.

The specific energies of nerve-structures, the existence of a substratum of compound sensation, and the essential identity of sensation and motion are biological and philosophical truths sufficiently definite and decisive in themselves; but they admit of a still more profound elucidation from a standpoint embracing the totality of animal organisation—a standpoint from which the unity of the organic individual and the substantiality of life will become evident actualities. I hope to be able, in future contributions, to expound these great and as yet unformulated doctrines of philosophical biology.

EDMUND MONTGOMERY.

II.—DETERMINISM AND DUTY.

ACCOMPANYING an intellectual acceptance of the Evolution-theory as affording the truest interpretation yet given of the facts of existence, there tends to arise in many minds a dread of certain practical moral consequences supposed to be incident to the spread of the doctrine. Misgivings are constantly expressed lest a conviction of the truth of the great modern hypothesis, in its sociological application especially, should be attended by the outgrowth of a fatalism so pronounced as to tend, more or less, to retard human progress, through the chilling of enthusiasm, the dwarfing of aspiration and the paralysing of endeavour.

The admission that human society, as a whole, has been "evolved" in a definite and uniform manner, analogous to the manner of development of an individual organism, is seen to point *by implication* at necessary causes or conditions governing the origination and workings of volition, since volition is the spring of the conscious acts of individuals composing society. Hence what becomes of "free-will"?

Nor is the doctrine of social evolution the only means by which science throws discredit on the idea of spontaneous volition. Modern physiological research brings to light facts favouring a theory of "Animal Automatism"; and shows consciousness, according to one view, as the mere "symbol" and "concomitant," and, according to another view, as the subjective equivalent, of a cerebral state. This cerebral state depends obviously on further physical conditions, which conditions are often, themselves, demonstrably of other than voluntary production, and are at the mercy of general physiological "laws". Thus is corroborated from another standpoint an apparently fatalistic view of human affairs, even in the cases where individual or social action visibly emerges as the consequent of, and visibly depends for its direction upon, the character of individual human wills. So it happens that some persons, even while admitting that there is a grave appearance of truth in the conclusions of science, yet deprecate the necessarian doctrine which seems to be involved in them, as "paralysing" and "discouraging"; and even find in its implications some undefined reason for doubting the efficacy of individual effort to promote social welfare. Such persons not unnaturally look forward with apprehension to the possible ultimate acceptance of evolutional doctrine by masses of men; and even while holding it to be the truest they can formulate, they seem to lose faith in the tutorship of fact, and to suspect that they have at last

found a case in which ignorance may be, if not absolutely beneficial, at least safe and harmless.

These apprehensions, however, appear to me to be founded on a certain misconception of what really is and is not involved in the question of free-will. And this misconception in turn arises from an ill-considered use of terms, which, when applied as we are wont to apply them, react on the ideas they rather cloud than express, to the confusion of the whole argument.

The aim of the present paper is, in the first place, to point out where this misconception lies; secondly, to discuss how much the *reality* and the *value* of the belief in free-will really amounts to; and further, to give reasons for presuming that such "fatalism" as is warranted by science, so far from operating unfavourably on the motives or energies of its believer, tends, or may tend, to influence him beneficially, and to render him a *more* and not *less* efficient agent in the promotion of human welfare.

I. It is commonly assumed by those who enter into the discussion of free-will that there exists a mysterious contradiction between the scientific conception of undeviating natural processes, and certain immediate *dicta* of consciousness concerning volition. This assumption is, however, gratuitous, and arises, as I believe, from the use of the ill-fitted words which we import into the discussion. There is no contradiction, names apart, between the deductions of science and the immediate deliverance of consciousness on this head. What science asserts generally is the indissoluble nature of the relation between cause and effect. Applying this general thesis to the particular case of volition, we merely affirm that each volition is dependent for its origination and its impetus on given antecedents, which may be within or without the field of immediate consciousness. On the other hand, what consciousness asserts is the connexion of our act with our will; which connexion no affirmation of science —least of all that which hints at the identity of will with cerebral conditions—ever tends to discredit. Consciousness asserts that we *do* as we *will*. Science asserts that we *will* as we *must*; and these two propositions, so far from being contradictory or even antithetical, are perfectly consistent with one another, and with the general doctrine of invariable causation.

Yet in argument we perpetually find the *freedom* of the will confounded with the *existence* of the will; and the voluntariness of action confounded with its dissociation from an endless and complex preceding chain of causes. Neither speaker nor listener, writer nor reader, perceives the error. Meanwhile the words used react on the ideas, and on their own further significance: and the argument flounders on its way into quicksands,

not of mystery, but of most illogical nonsense. If in every case we were to say "voluntary action" for "free-will," this would immediately appear; for it is our power of voluntary action—of doing as we intend to do—that men stickle for, I imagine, rather than the absolving of the will from all conditions of its impulses. It is the former and not the latter which at any rate gives their meaning to such words as "education," "government," "influence," "persuasion," and "responsibility".

If we analyse the utterances of those persons who repudiate scientific determinism on the ground of its supposed moral hurtfulness, we shall repeatedly find them accusing determinists of denying the reality of the human will. They speak alternately and indifferently of *will* and of *free-will* as if the terms were interchangeable, or the distinction between them unimportant to the argument. Having made this first step into confusion, a second commonly follows. Not only is the undisputed existence of what we know as "will" verbally confounded with its disputed spontaneity, but this disputed spontaneity of will is further confused with undisputed voluntariness of conduct. What wonder that the argument often concludes with a bewildered shake of the head, and an attempt to regard the matter as if there lurked about it the same "mysteriousness" as that which, from the very constitution of consciousness, shrouds all speculation concerning, say, the infinite divisibility of matter, or the boundlessness of space?

What I desire to point out is that, after all, the testimony in favour of determinism does not necessarily gainsay the belief that will (whatever be the conditions of its production), *as will*, contributes to action; and that so we act, or refrain, *as we choose*. All it does gainsay is, that the choice—the volition which prompted such act or forbearance—was, itself, its own originator, and independent for its existence, strength or direction of that undeviating process of things which we call law. After all, who contends for more than an admission that when we act consciously we act as we will? Who cares to deny that this or that circumstance or predisposition influences the desire that prompts to action? So stated, the reprehended fatalism reads very like a set of truisms, as universally believed as they are innocuous and pointless.

But, so far from conceding anything as to the real spontaneity of volition, I believe that these apparent truisms—that we act as we desire, and that we desire as circumstances and individual disposition combined lead and permit us to desire—are the forms in which we are all wont to express our real disbelief in free-will. Will is fixed midway between that which sets it up, and that which, when set up, it needs must accomplish, within

or without the willing organism. We do as we choose. We choose as—being ourselves, and circumstanced in a given way—we must. And in this light, which is the right light in which to view the bogey, it is well if it appear no bogey at all, but only a very familiar though unchristened acquaintance by whose rule we live day by day.

Yet, though we may live and prosper day by day on principles unconsciously held—woven by inherited and individual experience into our nature, and so instinctively followed in the main—the beneficent effects of any such principle are doubled in depth, in directness and in fruitfulness, when the principle dawns into consciousness and becomes a recognised and realised fulcrum to steady our motives on. Only when a thing is perceived—consciously differentiated from what it is *not*—can it become a power capable of stirring emotion; hence, of modifying volition; and hence, of directing consistent action. We must occasionally walk round and round our truisms and see what they amount to. It is not labour lost if a shred of mist get swept from the mind by the way; if a single life-principle thereby receive added vindication, or a single “law of nature” be once more proved consistent with itself. The full title to our unvarying and earnest deference of that old acquaintance, whose behest we obey as well as we can whenever we are reasonable, is only acknowledged after we have recognised that its real name is Necessity.

II. Preparatory to considering the bearing of fatalistic convictions on life, conduct, or progress, it may be well to examine what the so-called belief in *free-will* which is commonly opposed to such convictions really amounts to. That this belief is neither so definite, so confirmed, nor, consequently, so influential as its advocates allege, may be inferred from the shadowy character of the arguments by which it fortifies itself. Beliefs which are permanently useful, alike to the safe conduct and the progress of human life, are of two kinds. They are either the conscious affirmation of direct perceptions, as the belief in sunshine when one sees it, or they are realised intelligent convictions concerning some relation between things and result from a process of reasoning upon observed facts. Such is the belief that sunshine is an agency in ripening fruit. Of this kind also is the belief that acts performed by us, and corresponding with the volitions we are conscious of entertaining, are related to those volitions, and that the relationship is one of cause and effect. These beliefs are grounded upon invariable experience, and could we practically slight them life would, of course, quickly come to a standstill. If we have any evidence that the belief in *free-will* is of the same character, we are

justified in dreading—or, to speak more rationally, in denying—the possibility of its annihilation by scientific theories.

As to the first of these two types of belief, I think we have no reason for regarding the belief in free-will as an intuition. All that consciousness takes immediate note of is actual existence as represented in present feeling: abstract propositions, relating to the connexion or disconnexion of such feeling with antecedents, require several mental acts successively performed. What we immediately perceive in the case of volition is its *existence*, not its *origin*—the fact that we will this or that, not how we came to will it. At the moment of willing to move my pen across this page, I am wholly unconscious of the connexion or disconnection of my will to do so with conditioning antecedents. To arrive at *any* conclusion on the matter I must *re-view* my mental experience; and the conclusion reached is thus shown to be a matter of reasoning.

Intuition apart, what is the *rationale* of the vague feeling of freedom which has given rise to the belief in free-will? May it not be an illusive result of our power of inferring the future from the past? We recognise in ourselves the capability of being, to some extent and in a certain sense, indirectly acted upon by the future—that is, by what *is not*—that is, by *nothing*. Our power, based on memory of past experience, of forecasting events permits us to have wishes concerning what has not yet happened: these wishes modify our present conduct, and we feel as if such actions were the result of a literally spontaneous volition with nothing behind it. While actions based on a purposing volition *seem* to the agent to be based on what at the time *is not*, namely, on his state, or the state of something else at a future moment, what they really *are* based on is a present inference that the future will be like the present, which is in turn based on the consciousness that the present *is* like the past.

Whether this be anything like a true account of the vague feeling above alluded to, or whether the latter be always—as it certainly is sometimes—nothing more than the inexact reference consciousness makes to that real liberty of *acting as we choose* so constantly experienced, the certainty remains that no real belief in *free-will* can be of the nature of immediate intuition. If a distinct belief that the origin of volition is spontaneous (in the sense of being uncaused, or self-caused) be reached at all, it must be as a realised intellectual conviction, the result of a more or less extended process of reasoning.

Here the advocates of the belief in question are met by the discouraging fact that every step hitherto made in the investigation of the laws of volition tends towards the discovery of its dependent character. Nay, the very admission that conscious-

ness (of which will is a form) is governed by laws at all, virtually contains a denial of the self-determining nature of volitional impulses.

Comte, apparently sharing the wide-spread repugnance to necessitarian belief, vindicates his philosophy from the charge of fatalism on the ground that "all phenomena . . . admit of being modified in their secondary relations, and this the more as they are the more complicated": and further, that social phenomena "admit of larger modification than any others, and that chiefly by our own intervention".¹ The last clause quoted, implying as it does the efficiency of human will in modifying social phenomena, leaves untouched the question as to what modifies will itself, and affords another instance of the strange oversight by which in nearly all discussions on this subject propositions are advanced wide of the mark that neither prove nor disprove anything. What Comte means to affirm in reference to social phenomena, and what many others mean who use this argument of modifiability in reference to the will, is, I suppose, this—that the condition regulating the phenomena under examination are exceedingly complex and exceedingly subtle, and that the number and variety of things and circumstances capable of effecting modification are inconceivable; and that so, the possibilities of modification being practically infinite, the society, or the will, is practically free.

This argument, however, goes no way towards negativating a doctrine of necessity. For it must be borne in mind that even infinite modifiability is not freedom, is not even of the nature of freedom. To admit of modification is still to be at the disposal of modifying agencies. That *any* thing *may* modify volition is true enough in the abstract. It is true in reference to will in general, things in general, and time in general. What we have to remember here is that wills exist individually, that time is practically a single stream of successive moments, and that the sum of things constituting the conditions of a given volition at a given moment results in *one modification only*, which, in occurring, excludes all others; and that so, of all conceivable modifications, only that *one* occurs which the actual set of factors, antecedent and co-existent, renders at once possible and necessary. Infinite capability of modification does not, in short, imply any possibility of escape from one particular set of modifying agencies at any given moment of conscious existence, *of which set of agencies the will has at that moment no share in the selection.*

But those who maintain that the social changes constituting

¹ *General View of Positivism*, translated by J. H. Bridges, pp. 57, 58.

progress are of a character transcending natural law, and are un-necessitated in virtue of their being mainly brought about through voluntary human agency, are apt to overlook this. It is of the small, ever-recurring, and necessarily-modified volitions that the conscious life of every individual is made up ; his conscious life including all his voluntary actions as well as the motives (distinctly or indistinctly recognised) by which his conduct, moral, social, and political, is regulated.

If we assert that each moment separately is the determined and natural outcome of the moments preceding it, we must assert the same of a lifetime made up of such moments. And what we say of the life of an individual, we must also say of that social whole made up of multitudes of such individuals. It is only a question of relative complexity. If the modifications from countless extraneous and organic causes to which any given will is subject be, as they truly are, inconceivable in number and complexity, no wonder that we sometimes lose all sense of the fact that each modification as it occurs does so of necessity ; and in grouping larger numbers of such modifications into, say, a year's life, we find it even more difficult to realise that of all the various acts, words, and thoughts, not one was free to arise or to work, to be dispelled or to remain inactive, apart from its connexion with a determining and equally unfree antecedent. More complex again are the social phenomena made of the welded lives of millions.

Fortunately for us, the freedom of the will is no requisite of progress. Could we rightly see all that such freedom would imply, we should perceive that, in our present condition of ignorance at least, such freedom would be fatal to the continuance of society at all.

III. The question next arises, Does the abandonment of belief in *free-will* involve, either logically or practically, the abandonment of belief in human instrumentality as able to forward human wellbeing ? To affirm that it does is surely to draw a most inexact inference. The power of men's voluntary efforts to achieve their ends does not depend on the dissociation of the volition prompting the effort from antecedents, but on the exactness with which such effort, when made, conforms to the laws regulating the things with which the volition concerns itself. Whenever a man's will is at one with the constitution of things he wills about, we may say that he *does* accelerate the arrival of the end he desires. His will is a new and powerful factor added to all the other factors already at work at the inevitable ; and there is half a truth in the assertion that things run their appointed course the faster for its co-operation. But the degree in which his will so conforms is not a matter of his own deter-

mination. Its conformity depends on his knowledge of the conditions with which his forthcoming act will deal, and this knowledge is the outcome of the whole array of his past individual experiences. No less does the conformity depend on his power of applying, and his disposition to apply these lessons of experience; and this power and disposition have been settled for him by the incalculably longer array of ancestral experiences. To desire the conditions of social happiness, to know exactly what those conditions are, and to be able directly or indirectly to supply them is to possess mastery over those conditions. With these three forms of power, the moral, the intellectual, and the physical, the process of evolution has already to some small extent supplied us. But as yet we are not fully equal to the task of improving society by *direct* voluntary agency. The phenomena are too complex for our present powers. The *whole* of the natural force needed for the improvement of our race does *not yet* flow through the channel of human will. Meanwhile things do not stand still. While our imperfect adaptation to social requirements is shown in the frequent errors our volitions lead us to commit (even with the best intentions), the forces which have originated society are not idle at the work of its advancement. Though slowly and indirectly, they work through our very errors; since the gradual rectification of errors by their own natural reaction eventually brings about the inevitable improvement.

There is no escaping the conclusion that the future is as fixed and certain as if it were already past. The very belief in the fixity of law and the unbrokenness of causation, which is the ground of all our hopes, and which underlies and makes possible every volition, is also, when duly considered, tantamount to a belief in a future destination as certain, though not as certainly known, as the actual present. The subjunctive mood is the language of our ignorance. We need it to express our guesses, but it conforms not at all to the mode of actual being. However many ways we may beforehand imagine possibility may run, there *will* be only one way, and for that way things are already —nay, have ever been—in train.

We believe this practically every minute we live, concerning everything of which we have real knowledge. If I see a lighted match thrown among combustibles, I know that, other things equal, a conflagration must ensue. If I modify this statement with an "unless, or an "if," I don't imply any uncertainty in the actual issue, but merely *my own ignorance* as to whether the conditions necessary to check the conflagration are or are not forthcoming. The future as a whole, as well as in

detail, will be one thing and not another. Progress is single-streamed. Things only happen once. They *do* happen, and in happening exclude from the region of fact all "woudls" and "mights". On the aggregate *set* of human wills at the present moment depends the aggregate future effect of the special actions in which they are tending to issue. This is "fatalism?" But persons who shrink from its acceptance, or deprecate its promulgation as a truth, must surely be adding to the conception of "fate" something more than it necessarily contains. They must be assuming a conscious doggedness, or at least a callousness, somewhere hidden away among the impersonal forces at work around them, or they would not trust those forces so little. Past experience—and I use the word in its largest sense—should teach them better. This array of dogged and callous "laws" and forces is precisely that to which we owe our own distinctive powers. In their working they long ago "evolved" human consciousness, of which will is a form; and in the course of numberless generations they have at last brought within the range of that consciousness some of the conditions of its own amelioration. They will continue to work through consciousness increasingly henceforward; for it seems to be a rule that the highest faculty—that faculty which has taken most "evolving" to bring it into play—is ever that which is eventually employed as the chief instrument in the evolution of that which lies yet beyond it. This is exemplified in the fact that sight, when evolved out of mere tactful sensation, does the same work for the organism, and does it *better* than mere sensation: directing the creature in its escape from harmful influences, and in its search for things needful for its sustenance and general welfare. Intelligence is a vast improvement on instinct. That growing perception of the source and end of morals which answers to moral *sight* is a vast advance on the indefinite and blind moral *sense* which has for ages done duty for it, and when intelligence and intelligent morality have sufficiently long struggled with opposing circumstances to approach perfection, then and not sooner will that will, which, without too much straining of language, we may call their appropriate "organ," be competent to receive and transmit most of the forces needed for the next step forward. In other words, when the conditions of wellbeing are fully known and rightly balanced by the understanding, then and not sooner will voluntary exertion be the instrument exclusively employed in attaining social ends.

Thus we find it is one thing to deny the freedom of the will: quite another to deny its activity as a factor in human advancement. I think we are justified in accounting conscious effort to

be the appropriate effect of volition. For in so far as an act or a series of acts, accompanied by that form of consciousness we recognise as volition, while *inwardly* felt as effort of will, is invariably observed *outwardly* to differ in force, directness, and coherence from an act, or a series of acts, not so accompanied, so far are we by the laws of thought compelled to infer the necessity of that *accompaniment* as a specific factor, to effect that *difference* which is the specific product: to infer, in short, that will is, like everything else, needed for the achievement of its own result.

Will leading to action is one of the admitted means by which the progress of society has been secured. Things having been as they have been (the operation of human will on human action included), the affairs of mankind have shown a progressive tendency. The cessation of voluntary endeavour would be the cessation of what has, to say the least, constantly accompanied progress. Has any consistent believer in continuous causation, then, a right to assume that this constant accompaniment can be waived, and all go on as before? that what has happened will continue to happen under unlike conditions? Till it be proved that human endeavour has done more harm than good, till it be proved that this preponderance of harm is on the increase, and that the manifold experiences conscious effort has brought have made men less and not more spontaneous with Nature's method, we must assume the needfulness of such conscious effort as one of the many means by which the increase of social well-being is secured. The more clearly universal history shows us the coincidence of human improvement with human endeavour, the stronger must the tendency become to make the endeavour when we desire the improvement. The will is not free to remain unaffected by a dictum of history any more than by anything else recognised as true: and if the wish for anything be coupled with a just knowledge of how it has hitherto been attained, the consequence will be the putting forth anew of the energy which has before been proved successful. The fact that we consciously co-operate in the necessary working of the law we live by does not surely nullify either the consciousness or the law. When a man sees—what after all is there before he sees it—that whatever he does produces an effect of one necessary kind, a factor is added, calculated to render his acts effective and their effect such as he aims at. For such realisation itself modifies the man's will, disposing him to act in conformity with such knowledge as he possesses of the conditions regulating what he wills about, and so far as he judges truly of those conditions, he will act rightly.

This seems self-evident. But that it is not wholly unneces-

sary to insist, as a matter of theory, on the real influence of will on conduct is shown by the readiness with which the advocates of a belief in free-will assume that, along with the freedom of the will, its efficiency is denied by their opponents. The truth is that part of the non-freedom of the will consists in its being bound up with a consequent no less than with an antecedent; the existence of a volition involving no less the succeeding mode of existence or action of which it is itself a condition than it is itself involved in the sum of pre-existing and co-existent conditions which necessitate its own origination. It matters little, except as theory, whether we call the will a "symbol" always "accompanying" given molecular changes in the brain, or whether we reverse the terms, or whether we adopt the third and (it seems to me) most tenable hypothesis, which—repudiating the terms "symbol" and "accompaniment" as inadequate or misleading—regards the will, and that cerebral state always attending it, as an identical phenomenon under different aspects. The facts, however we theorise on their origination, remain for all present purposes the same. Given will, and a certain sequence follows, exactly corresponding as "effect" with will as "cause".

As to the arguments drawn from the phenomena of social development, I am not aware that any of them deny or render doubtful the necessity of those activities we recognise as voluntary in the achievement of social welfare. Neither is it evident that a belief in the necessary origin of the effort which achieves good lessens that *desire for good* which *prompts the effort*. While, on the one hand, the various arguments put forward to show that the amelioration of society has been, directly or indirectly, brought about by human endeavours consciously directed to secure that end, while these arguments do not negative the just application of the theory of evolution to social phenomena; yet, on the other hand, a doctrine setting forth the slow and inevitable evolution of that human will which has so largely contributed to the progress of mankind, in no way lessens the practical value of the voluntary moral and social efforts which are its natural outcome.

Those who fear that belief in the necessary character of volition, and in the parallel doctrine of the inevitable nature of progress, is likely to paralyse moral effort, may be asked the following questions:—

(1) Do not those conscious acts of ours which we recognise as efforts, often produce those results which we recognise as gains in welfare?

(2) Does a conviction that certain means have attained certain

ends lessen our faith in those means, or hinder our alacrity in employing them when we seek those ends?

(3) What reason is there for assuming that a perception of the law by which human ends are gradually worked out, will lessen that desire for wellbeing, or that uneasiness in its absence which has been one of the chief instruments of increased welfare, in the stimulation of action through volition?

The conviction that the all-powerful "laws of nature," are working through our own wills at the (now conscious) evolution of our ascending race, is surely more effort-inspiring and more encouraging than is the opposite belief that a multitude of purblind individuals are waging unequal war with universal law; which law they only very partially understand, and which, without such sorry *opposition* as human ignorance can make, would infallibly drift mankind backward into barbarism and ruin.

Lastly, we must surely consider deeply before we decide that we are face to face with such an unprecedented anomaly as a pernicious truth, concerning which ignorance or denial is likely to be desirable. If a thing is true, a man or a community must surely be the better for knowing it, because the wiser. It must be easier to adjust conduct to the sum of surrounding conditions when a new fact or a new law—that is, a new condition—becomes manifest. If our volitions are necessitated—each as it arises—then by all means let us know it; that we may see with added clearness how important is the discovery of all things which tend to direct it rightly; and that, so seeing, our wish may be such as to result in the right (*i.e.*, nature-rewarded) measures whenever we aim at the attainment of any end that lies on the other side of a human will. Could all the dutiful persons in the world become consistently "fatalistic,"—could a conviction permeate the moral portion of society that, though right willing is a condition of right action, or even right disposition to action, it remains no less certain that given conditions are necessary to the origination of this right willing,—I believe the improvement of our condition would be then and there accelerated. For such a conviction could not but result in an earnest adherence to such of the physical and psychical laws governing the origination of impulse as are known, and an equally earnest search for such as are not yet discovered. So long as will tends to action or, which amounts to the same thing, so long as the will's inseparable condition of brain tends to action, and so long as such action differs in directness from purely unintentional action, the progress of life can hardly be retarded by a recognition of what the conditions of will or of that brain-state really are. Only when we have admitted and realised that volition does invariably conform to law can we

consistently set about operating on it, so as voluntarily to influence life and deed through its agency. Our belief in education, and in government by reward and penalty, indicates our *practical* belief in determinism; all that modern philosophy does is to prop practice by theory.

No dismay need attend the conception of inexorable conditions governing the will when we recollect how far those conditions have already brought us. Comparing the condition and life of a modern intellectual person, or the condition of the society in which such persons are numerous, with the semi-conscious existence of a struggling barbarian, we may gladly concede with Mr. Spencer that "freedom of the will, did it exist, would be at variance with the beneficent necessity displayed in the evolution of the correspondence between the organism and its environment": seeing that, since the means by which life becomes higher and happiness greater is the gradual moulding of inner relations by outer relations, "the harmony at any moment existing would be disturbed, and the advance to a higher harmony impeded," "were the inner relations partly determined by some other agency:" and that so there would result "a retardation of that grand progress which is bearing Humanity onwards to a higher intelligence and a nobler character."

He who would largely influence for good, *i.e.*, for liberty, his own destiny or that of posterity must first be the intelligent pupil of experience, and so the (consciously or unconsciously) acquiescent servant of the "inexorable". If a man is ever to be master of his fate he must first know, with a knowledge transcending all his present powers, what are the laws regulating the infinitely complex conditions of his own well-being; and then he must *obey* those laws with a docility and a consistency at present undreamt of even by philosophy.

Meanwhile the knowledge we have does not lead us to assert the vanity and uncertainty of all human effort, but only on one side the failure of human mistake, and on the other the certain success of human rectitude. Human mastery over human fate increases day by day. It is *part* of human fate that it should do so. We cannot *not* learn by experience: we cannot see given results, good or bad, follow given acts without having our will concerning future acts of the same character modified henceforward; though of course the action of observed facts on the will depends in each individual case for its degree of force, clearness, and permanence on the higher or lower stage of organisation reached. The learning by experience is most sure and most rapid in the highest intelligence; and here again is an instance of the beneficent way nature plays into her own hands. For the most competent persons—those persons, that is, who best

understand how to re-apply experience—are ever the most certain to do so: and their acts, good or bad, being more consistent and more frequently repeated, more organised and more law-rewarded, ever tend to deepen and widen that "line of least resistance" along which mankind is at once impelled and attracted to its own ennoblement. The higher the organisation the keener is the awareness and the greater the power of effecting what we may—for the nonce—call self-modification. To understand Nature's economy is to fall in with it and see the vanity of attempting any other plans than those marked out for us in the chart of possibility. Thus to believe is perhaps to abandon impatient hopes of great achievement in one's own lifetime, or through one's own personal instrumentality; but it is to see also that nothing could in the nature of things have been gained by *not* abandoning them, since they were waste of steam. We learn to husband our resources and to spend them on the principles set us by necessity. Still, what was but a hope before becomes an increasingly confirmed security when once we are so awake to the unfailing and inexorable nature of causation as the necessary growth of one thing out of another, as to trace its impersonal working in the affairs of personal conduct. The promise of the inevitable reward which universal law will bestow on the smallest rightly-guided action (which reward shall be reaped in kind either by oneself or by others for whom one labours) raises the moral importance of the most inconspicuous deed or most passing word from the level of trifles to that of "efficient causes". Moreover, the frame of mind which is indirectly induced in a morally disposed person by an acceptance and practice of the principle of Necessity is of that noblest of all conceivable types—the self-bestowing, the super-personal.

To sum up: (1) The bogey men make of their own ill-fitted words tends to vanish altogether when those words are replaced by the thoughts they represent. To deny the self-creative power of volitional impulses is seen not to imply a denial of the useful character of the acts and efforts based on those impulses. To affirm that volition depends for its existence on an uneasiness set up in the organism by some faulty adaptation of its present circumstances to its present functions is also seen to leave the cause of any such uneasiness what it was, and therefore to leave the conditions involving "aspiration" unaffected, at least so long as human life is felt by human beings to be short of perfection.

(2) Starting from the assumption that beliefs which are necessary to the conduct and progress of life are mostly either instant and intuitive perceptions (such as belief in sunshine

when one sees it, or belief in will when one feels it), or else are recognised and realised connexions of cause with effect (such as that belief which attributes the ripening of fruit *in part* to the agency of sunshine, and the attainment of a distant end *in part* to the action of our will on our intervening conduct), it appears that the belief in the spontaneous nature of volition, being neither of the former nor the latter type, may be beforehand supposed unnecessary to the proper conduct of human affairs. This conclusion is reinforced when we discover that the abstraction of the so-called belief leaves the real springs of effort untouched, and human capabilities of "mastering" circumstances precisely what they were.

(3) The spread of a scientifically-warranted fatalism need not be dreaded by any persons who believe in its truth. A true belief in a sane mind works infallibly, and works for good.

Much good is done by right naming, and many things in the conduct of thought and of life may be beneficially affected when the inseparable connexion subsisting between our conscious lives and the rest of nature is recognised. As Emerson says, "If Fate is ore and quarry; if evil is good in the making; if limitation is power that shall be; if calamities, oppositions, and weights are wings and means—we are reconciled. *Fate involves the melioration.* No statement of the universe can have any soundness which does not admit its ascending effort."

If we are "fatalists," and at the same time have faith in the tutorship of experience as the means by which the gradual change we feel as progress is secured, we shall see futility nowhere; but even in those cases where a fervent effort fails of its intended end we shall recognise, both in the effort and in its failure, the beneficent working of that universal law by which impersonal nature perpetually sifts out her own shortcomings, and increases her own truth of aim. I say *impersonal* nature, thus seeming to beg the theological question, because the abounding signs of this general impersonality in the economy of nature are reinforced by the fact that, taking *life* as the consummation of *existence*, only some millionth or less part of things so fortuitously comports itself as to issue progressively, beneficially, or even coherently. The discouragement this fact suggests may be, however, for us who do live, balanced by the further fact that (given the absence of any opposing, clumsy, shiftless, or maleficent personal power) the successful millionth of lifeward occurrence gathers, and must gather, as it goes; and, eventuating in conscious volition, must bring ever more and more of nature under its purposive control. The conditions under which this life-power may be continuously maintained and increasingly attained, we call the "laws" of life. Which

"laws" as they come to be better known, and can be better co-operated with, must, for all we can conceive to the contrary, tide man onwards ever nearer to that happy and powerful something he is tending to be.

Knowledge is the rectifier of will: and each increment of truth, however severe its immediate implications, betters our condition. So far as the growing belief in the dependence of will on fixed conditions is the natural and normal outcome of a widening knowledge of things and relations, we must take it as itself part of our advance and trust. Our "fate" has hitherto been that "will" should be "evolved" in us, and that, when evolved, it should plunge us with added impetus into that struggle for individual and social amelioration in which life consists. At last comes the determinist, and avers that nature claims all these (rightly called) *voluntary* efforts of ours as her very own, and adds the promise to our hope of success for ever and in exact proportion to the exactness of our voluntary conformity to the laws of our own being and wellbeing.

In the severely merciful code which is the product of such a creed as this, while vengeance and impunity are alike shut out by the larger law of equity, there *tends* to grow up between each man and his fellows that spirit of "sweet reasonableness" which, in proportion as it prevails, further tends to land us, individually and collectively, in a completer welfare than any that our present sluggish aspirations enable us to imagine.

L. S. BEVINGTON.

III.—SYMBOLICAL REASONING.

SYMBOLICAL reasoning may be said to have pretty much the same relation to ordinary reasoning that machine-labour has to manual labour. In the case of machine-labour we see some ingeniously contrived arrangement of wheels, levers, &c., producing with speed and facility results which the hands of man without such aid could only accomplish slowly and with difficulty, or which they would be utterly powerless to accomplish at all. In the case of symbolical reasoning we find in an analogous manner some regular system of rules and formulæ, easy to retain in the memory from their general symmetry and interdependence, economising or superseding the labour of the brain, and enabling any ordinary mind to obtain by simple mechanical processes results which would be beyond the reach of the strongest intellect if left entirely to its own resources.

The most striking achievements of symbolical reasoning are to be found in the various branches of pure and applied mathematics, and in short in all subjects of human inquiry that admit of more or less exact *measurement*. In all these the symbols employed represent numbers or ratios, or the various relations of numbers and ratios. Till within very recent times symbolical reasoning was exclusively restricted in its application to questions of this nature—questions to which the final practical answer was always an arithmetical expression.

The first person to show that symbolical reasoning might also be employed with advantage in the investigation of matters usually considered altogether beyond the sphere of mathematics was the late Professor Boole. This he did first in his *Mathematical Analysis of Logic*, and afterwards more fully in his celebrated *Laws of Thought*, published in 1854.

These works excited much admiration in the mathematical world, and, it may be added, caused no small trepidation among logicians, who saw their hitherto inviolate territory now for the first time invaded by a foreign power, and with weapons which they had but too much reason to dread. With these potent mysterious symbols mathematicians had already extended their dominion far and wide, whilst they, the successors of the illustrious Aristotle, had not added a single acre to the very restricted possessions bequeathed to them by their great predecessor. And now their aggressive rivals threatened to wrest from them these very possessions and annex the sacred province of logic also to the already over-grown empire of mathematics.

If the attack led by Prof. Boole had been vigorously followed up by his fellow-mathematicians, it might have gone hard with the logicians; but it was not thus followed up, and the logicians had therefore time to recover from their consternation. Ten years after, in 1864, Professor Jevons published his able treatise on¹ *Pure Logic* and in a skilfully planned attack regained possession of the ground which the invader had occupied with his symbols. He showed that the whole of Prof. Boole's results might have been obtained more briefly, as well as much more simply, from purely logical considerations, and with no more symbolism than logicians were already in the habit of using. Other champions, and notably Mr. A. J. Ellis, though a mathematician himself, soon followed and espoused the cause of logic against mathematics, each planting his own system like

¹ It may be here remarked that Prof. Jevons uses the expression *Pure Logic* in a somewhat different sense from that in which I use it further on in this paper.

a strong fortress where he thought it would most effectually protect the ancient and venerable science from future invasion.

The writer of this paper would like to contribute his humble share as a peacemaker between the two sciences, both of which he profoundly respects and admires. He would deprecate all idea of aggression or conquest on either side, and yet it is quite plain to him that the two cannot henceforth remain distinct and independent as they have hitherto done. Union for the future there must be; this is written in clear and indelible letters in the book of fate. But can there be no union without conquest and annexation? Would England be happier or more prosperous now if she had conquered and annexed Scotland, as she very nearly succeeded in doing in the reign of Edward I.? Would Scotland be freer or more contented if she had stubbornly rejected and resisted the act of union in the reign of Queen Anne? Do not Englishmen and Scotchmen alike now both "glory," as George III. said he did, "in the name of Briton"? Why should not logicians and mathematicians unite in like manner under some common appellation?

That logic, when treated symbolically, is capable of rendering important services to mathematics was shown by Prof. Boole in the latter portion of his *Laws of Thought*, in which he applies his method to certain classes of questions in mathematical probability. Quite recently I have myself shown in my papers on "Symbolical Language" published in the *Educational Times*, and much more fully in the first of my three papers on the "Calculus of Equivalent Statements," published in the *Proceedings of the London Mathematical Society*, that by the help of logic (treated symbolically) we may clear away with the greatest ease a complete jungle of difficulties which had vexatiously arrested the progress of mathematical science in a direction in which its cultivators were most eager to advance it. This jungle of difficulties presented itself in that part of the Integral Calculus which treats of the limits of multiple integrals, a subject which had occupied the attention of some of the most eminent mathematicians for the last fifty years or more, and which they had found extremely perplexing. In the "Calculus of Equivalent Statements" (as I have called my symbolical invention) logic presents the mathematician with an instrument at whose touch all these difficulties vanish. It is an instrument too of so simple a construction and so easy of application that a mere school-boy may speedily learn to use it. To give a detailed description of this invention is not my purpose. But I may be allowed to explain as clearly as I can, and with as few technicalities as possible, the elementary logical principles upon which it is based.

Such an explanation, discussing, as it will do to some extent, the fundamental rules of our ordinary reasoning, should, if I properly perform my work, possess some interest, not for the professed logician or mathematician merely, but for all educated readers.

Logic may conveniently be divided into two kinds, namely,¹ *Pure Logic* and *Applied Logic*. In a strictly analogous sense mathematicians usually distinguish between¹ *Pure Mathematics*, including geometry, algebra, the differential calculus, &c., and *Applied Mathematics*, which includes mechanics, optics, astronomy, and in short any science whose subject-matter is capable of more or less exact measurement or numerical calculation. And it is only from this point of view of measurement and numerical calculation that such sciences are in any way dependent upon mathematics. In optics, for example, there are many remarkable phenomena which not only may be explained very clearly without any aid from mathematics, but even exclude all mathematical considerations as irrelevant. It will conduce much to clearness of thought if we in like manner draw a distinct boundary line between *Pure Logic* and *Applied Logic*.

Pure Logic may be defined as the general science of reasoning considered in its most abstract sense, that is to say, as far as possible independently of any special subject of investigation. In other words, *Pure Logic* is the Science of Reasoning considered with reference to those general rules and principles of thinking which hold good whatever be the matter of thought.

Applied Logic may be simply defined as the application of the general rules of pure logic to *special subjects*, such as mathematics, physics, medicine, politics, or in fact anything (down to the most ordinary concerns of life) that offers any workable material for the human reason.

Reasoning again, whose fundamental rules and principles it is the business of logic to investigate and explain, may also be conveniently divided into two kinds, *mental* and *symbolical*.

In *mental* reasoning we dispense entirely with symbols, and in the dark and silent recesses of our own minds endeavour to evolve fresh knowledge from the knowledge already existing there. In this kind of reasoning all our outward senses are quiescent and we might still be capable of it even if we were blind, deaf and dumb, and unable to move hand or foot.

In *symbolical* reasoning, on the other hand, we use symbols as artificial aids to our naturally more or less defective memories.

¹ The adjectives *abstract* and *concrete* would be preferable to *pure* and *applied*, were it not for the fact that the expressions *pure mathematics* and *applied mathematics* are already established by usage.

These symbols may be divided into two kinds, *permanent* and *temporary*. By a *permanent* symbol I mean a symbol whose meaning is permanent or always the same. By a *temporary* symbol I mean a symbol to which we attach only a temporary meaning. Here again the science of mathematics supplies us with a useful analogy. In common arithmetic, in which the same symbol or collection of symbols always denotes the same number or ratio, we have examples of *permanent* symbols; and in algebra, in which the same letter or symbol may denote sometimes one number or ratio and sometimes another, we have examples of *temporary* symbols. In our common ordinary reasoning, in like manner, the same word or collection of words has always the same meaning; whereas in symbolical reasoning, the same letter or symbol may sometimes have one meaning and sometimes another. The analogy between the algebra of mathematics and the algebra of logic may be carried a step further. In both, *permanent* as well as *temporary* symbols are employed when convenient, and in both, the symbols of *relation*, such as + and \times , are always permanent.

In my system of symbolical reasoning I have found it convenient to make my *temporary* symbols denote *statements*, while my *permanent* symbols, such as +, \times , :, usually denote the various relations in which these statements stand with respect to each other. That each individual temporary symbol, as well as every combination of such symbols, always denotes a *statement*, is one of the leading characteristics of my logical system, to the fuller explanation of which I now proceed.

Definition 1.—When two or more statements are made, each is called a *factor* of the *compound statement* which they collectively make up; and this whole compound statement is called a *multiple* of each separate factor, and the *product* of all the factors combined.

Thus, let a denote the statement "He is tall," let b denote the statement "He is dark," and let c denote the statement "He is a German". Then abc will denote "He is a tall, dark German". This compound statement abc is the *product* of the three factors a , b , c , and a *multiple* of any single factor a .

In the foregoing example the three statement-factors a , b , c refer all to one common subject; but this need not always be the case. For example, if a denote "His father is German," and b denote "His mother is French," then ab will denote the compound statement "His father is German and his mother is French".

This combination of factors into multiples may also, as in common algebra, be expressed by the symbol \times . Thus, the symbols abc and $a \times b \times c$ are equivalent.

Def. 2.—When a *disjunctive* statement is made, the several statements of which it is formed are called the *terms* of this statement ; and, on the other hand, the disjunctive statement is called the *sum* of the terms. These terms are connected, as in mathematics, by the sign $+$. Thus, "He will go to Paris, Vienna, or Berlin, this summer," may be expressed by the disjunctive statement $a + b + c$, if we agree that the first term a denotes the statement "He will go to Paris this summer," that the second term b denotes the statement "He will go to Vienna this summer," and that the third term c denotes the statement "He will go to Berlin this summer".

The terms of a disjunctive statement do not necessarily refer (as in this example) to the same subject. For example, if a, b, c , respectively denote the three statements, "Henry will go to Paris," "Richard will go to Vienna," and "Robert will go to Berlin," then the symbol $a + b + c$ will denote the disjunctive statement "Henry will go to Paris, or else Richard will go to Vienna, or else Robert will go to Berlin". The disjunctive symbol $a + b + c$ asserts that *one* of the three events named will take place, but it makes no assertion as to whether or not *more than one* will take place.

In my papers in the *Educational Times* and in the *Proceedings of the Mathematical Society* these disjunctive statements are called *indeterminate statements*.

It is evident that in this algebra of statements the words *factor*, *multiple*, *product*, *sum*, and *term*, have not by any means the same meaning as in ordinary algebra ; but there are some remarkable analogies which render it desirable and convenient to borrow these mathematical terms, instead of inventing new ones. The most remarkable of these analogies is to be found in the rule of multiplication, which is precisely the same in logic as in mathematics. In logic as in mathematics the product of the factors $a + b$ and $c + d$ is $ac + ad + bc + bd$, and the same rule holds good whatever be the number of factors, and whatever be the number of terms in the respective factors. Thus, if a, b, c, d , respectively denote the four statements "He will go to Aberdeen," "He will go to Brighton," "He will go to Chester," "He will go to Dublin," the expression $(a + b)(c + d)$ may be read "He will go either to Aberdeen or to Brighton, and he will also go either to Chester or to Dublin"; while the equivalent expression $ac + ad + bc + bd$ may be read "He will go to Aberdeen and to Chester, or else he will go to Aberdeen and to Dublin, or else he will go to Brighton and to Chester, or else he will go to Brighton and to Dublin".

Def. 3.—The symbol $:$, which may be read "implies," asserts

that the statement following it must be true, provided the statement preceding it be true.

Thus, the expression $a:b$ may be read "a implies b," or "If a is true, b must be true," or "Whenever a is true, b is also true". As a simple verbal illustration, let a denote the statement "He received the letter yesterday," and let b denote the statement "The letter was posted more than a week ago"; then the symbol $a:b$ may be read "If he received the letter yesterday, it must have been posted more than a week ago". Again, let a denote the statement "No foreigners are eligible for that appointment, and this man is a foreigner," and let b denote the statement "This man is not eligible for that appointment". Then the symbol $a:b$ may be read "If no foreigners are eligible for that appointment, and this man is a foreigner, he cannot be eligible for that appointment". Here a denotes a compound statement which may be resolved into two factors. Let m denote the first factor, "No foreigners are eligible for that appointment," and let n denote the second factor, "This man is a foreigner"; then $a=mn$, and the symbols $a:b$ and $mn:b$ denote exactly the same statement, namely, "If no foreigners are eligible for that appointment, and this man is a foreigner, he cannot be eligible for that appointment".

Expressions of the form $a:b, mn:b, a+b:c+d, \&c.$ (involving the symbol $:$) are called *Implications* or *Conditional Statements*. The statement to the left of the sign $:$ is called the *Antecedent*, and the statement to the right of the sign $:$ is called the *Consequent*.

Def. 4.—The Symbol $=$, when placed between two statements, asserts that the two statements are equivalent, each implying the other. Thus the equation $a=b$ is equivalent to the compound implication $(a:b)(b:a)$; or, as it may be expressed symbolically $(a=b)=(a:b)(b:a)$.

It is easy to see that the implication $a:b$ is a brief and convenient equivalent for the equation $a=ab$. The economical advantages secured by adopting the former as an abbreviation for the latter do not seem so great when the antecedent is a simple expression as above. But let the antecedent be a complex expression, and the advantages secured by the symbol $:$ become apparent at once. It requires no formal proof to show, for instance, that the implication $a+bc+de:x$ is a much simpler and more manageable expression than its equivalent, the equation $a+bc+de=(a+bc+de)x$. But mere economy of mechanical labour is not the sole advantage which results from the adoption of this symbol of inference or conditional statement. It is also a very simple and suggestive representation of a great and fundamental law which runs through all reasoning, and

which, from want of a better name, I will call the *Law of Implication*. This law expresses the broad fact that the sole function of the reason is to evolve fresh knowledge from the antecedent knowledge already laid up in the store-house of the memory, and that unless we supply it with this material to work upon, it will not work at all. A mere sense-impression, too fleeting and transitory to enter into combination with some previous recollection, is a material of which the reason can make no use. This law of implication seems to have presided over the very birth and infancy of human speech, as well as over its subsequent growth and development. Every verbal statement, as we all know, may be divided into two distinct parts, which are technically called *subject* and *predicate*. But if we examine very closely the meanings of these terms, we shall find that the relation in which they stand to each other is strikingly analogous to that connecting the terms *antecedent* and *consequent* in any implication $a:b$. Take for example the statement "Man is mortal". Let a denote the statement "He is a man," and let b denote the statement "He is mortal". Then the implication $a:b$ is an exact equivalent for the statement "Man is mortal". But this subject will be considered more fully when we come to speak of the syllogism.

Since the implication $a:b$ is an equivalent for the equation $a = ab$, it follows that the antecedent a is a *multiple* of the consequent b .

Def. 5.—An accent ('') is the symbol of *denial*, and simply negatives any statement (simple or complex) to which it is affixed. Thus a' is the *denial* (or negative) of a . It does not assert that a (if a compound statement) may not possibly contain *some* true factors; it only asserts that there is falsehood somewhere, that *one* factor at least of a is false. If a denotes the statement "He will go to Aberdeen," a' will denote the statement "He will *not* go to Aberdeen". So if ab denote the compound statement "He will go to Aberdeen, and she will go to Brighton," then $(ab)'$ will simply deny this, and may be read "*It is not true* that he will go to Aberdeen and that she will go to Brighton".

A little consideration will show that the symbol $(ab)'$ is equivalent to the symbol $a' + b'$. Attaching to the former the same meaning as before, namely, "It is not true that he will go to Aberdeen and that she will go to Brighton," the latter may be read "Either he will not go to Aberdeen or she will not go to Brighton". In like manner we get $(abc)' = a' + b' + c'$, and so on.

As another example take the equivalent symbols $(a + b)'$ and $a'b'$. If a and b respectively denote the same statements as

before, the symbol $(a + b)'$ may be read "*It is not true* that either he will go to Aberdeen or that she will go to Brighton"; and the equivalent symbol $a'b'$ may be read "He will not go to Aberdeen and she will not go to Brighton". Similarly we get $(a + b + c)' = a'b'c'$, and so on.

Def. 6.—Statements represented by letters or any other arbitrary symbols, which we adopt for the convenience of the moment and to which we attach only a *temporary* meaning, are usually statements whose truth or falsehood may be considered an open question, like the statements of witnesses in a court of justice. It is convenient therefore to have an invariable symbol which shall be applicable to any statement whose truth is admitted and unquestioned, and to such a statement only. The conventional symbol used for this purpose is the symbol 1. For a like reason it is convenient to have an invariable symbol to represent any statement whose *falsehood* is admitted and unquestioned. The symbol used for this purpose is 0.

These symbols, 1 and 0, I have borrowed from the mathematical theory of probability, which, I need hardly say, was the suggestive origin of my whole method, as it in all probability was the suggestive origin of the similar yet fundamentally different method of Professor Boole.

The following are a few among many useful and symmetrical formulae that may be readily deduced as necessary consequences of the preceding definitions:—

- (1.) $aa' = 0$
- (2.) $a + a' = 1$
- (3.) $(abc \dots)' = a' + b' + c' + \dots$
- (4.) $(a + b + c + \dots)' = a'b'c' \dots$
- (5.) $(ab + a'b)' = ab' + a'b$.
- (6.) $(a : b) = (b' : a')$, and $(a : b)' = (b' : a')$.
- (7.) $(a : b) : a' + b$.
- (8.) $(a = b) : ab + a'b$.
- (9.) $(x : abc \dots) = (x : a)(x : b)(x : c) \dots$
- (10.) $(a + b + c + \dots : x) = (a : x)(b : x)(c : x) \dots$

The first of the above formulae, namely, the formula $aa' = 0$, symbolically expresses the law of thought to which logicians have given the name of the *Law of Contradiction*. It asserts that a statement and its denial cannot both be true. By virtue of this formula any compound statement that contains any inconsistent combination like aa' vanishes as an impossibility. For example $abc' = 0$.

The formula $a + a' = 1$ is the symbolical expression of the law of thought to which logicians have given the name of the *Law*

of Excluded Middle. By virtue of this formula we have the equation $a = a(b+b')$, whatever the statement b may be.

The formula $(ab+a'b')' = ab' + a'b$ may be proved as follows :

$$(ab+a'b')' = (ab)'(a'b')', \text{ by formula 4,}$$

$$= (a'+b')(a+b), \text{ by formula 3,}$$

$= ab' + a'b$, by actual multiplication, omitting the two impossible or zero terms aa' and bb' .

The formula $(a:b) = (b':a')$ is the symbolical expression of the logical Principle of "Contraposition". It asserts that the statement "If a is true, b is true," is the exact logical equivalent of the statement "If b is false, a is false". The truth of either of these two conditional statements follows as a necessary consequence of the truth of the other. This principle of Contraposition is a very important one.

The formula $(a:b) : a' + b$ deserves some consideration. Let a denote the statement "He will persist in his extravagance," and let b denote the statement "He will be ruined". Then the implication $a:b$ may be read "If he persists in his extravagance he will be ruined," while the disjunctive statement $a' + b$ may be read "He will either discontinue his extravagance, or he will be ruined". To some readers these two statements may seem logically equivalent, so that they should be connected by $=$, the symbol of equivalence, and not by $:$, the symbol of inference or implication. We will therefore subject the statements to a closer analysis. If they are really equivalent their denials will also be equivalent. Let us see if this is the case. The denial of $a:b$ is $(a:b)'$, and this denial may be read "He may persist in his extravagance without necessarily being ruined". The denial of $a' + b$ is $(a'+b)'$ or ab' (see formula 4), which may be read "He will persist in his extravagance, and he will not be ruined". Now it is quite evident that the second denial is a much stronger and more positive statement than the first. The first only asserts the *possibility* of the combination ab' ; the second asserts the *certainty* of the same combination. The denials of the statements $a:b$ and $a' + b$ having thus been proved to be not equivalent, it follows that the statements $a:b$ and $a' + b$ are themselves not equivalent, and that, though $a' + b$ is a necessary consequence of $a:b$, yet $a:b$ is not a necessary consequence of $a' + b$.

It is easy to see that the implications $a:1$ and $0:a$ give us no information whatever as to the truth or falsehood of a , but that the equations $a = 1$, and $a = 0$ are the exact equivalents of the implications $1:a$ and $a:0$ respectively, and that from the former we infer that a is true, and from the latter that a is false.

Consistency of notation in this algebra of logic requires that the implications $a:1$ and $0:a$ should each be equivalent to 1

whether the statement a be true or false. In a strictly analogous manner consistency of notation in the common algebra of mathematics requires that a^0 should be equal to 1 whatever be the value of the number or ratio a . In the one algebra we may thus have the anomalous looking equation $(0 : 0) = 1$, and in the other the anomalous looking equation $0^0 = 1$.

The symbol : for the word *implies* is not quite an equivalent for the symbol . . commonly used for the word *therefore*. The difference in meaning between the two symbols may be seen from the equation $(a \therefore b) = a(a : b)$. The statement $a \therefore b$ is stronger than the conditional statement $a : b$ and implies the latter. The former asserts that b is true *because* a is true; the latter asserts that b is true *provided* a be true.

We will now examine the syllogisms of Aristotle in the light of this notation. The first thing that strikes anyone on reading these syllogisms for the first time is the constant recurrence of the words *all*, *some*, and *no*, as in the syllogism "No men are gods; all men are living beings; therefore some living beings are not gods" (Felapton). Moreover, in applying these syllogistic rules to examples of ordinary reasoning, expressed in the simple untechnical language of daily life, logicians usually subject this language to more or less distortion, resulting sometimes in extremely uncouth and scarcely comprehensible phrases, in order to introduce one or more of these quantitative words, without the express use of which they apparently think that no argument can be strictly and rigorously logical. For myself, so far am I from regarding those words as indispensable accessories to logic that I look upon them rather as the fatal cords that have for centuries held prisoner this noblest of the sciences and effectually prevented its flight beyond the limits of a meagre and barren circle of insipid truisms. By cutting these cords asunder we can, I believe, set logic free to soar on vigorous pinions into new and fruitful regions, where it will join the other sciences, and in the common pursuit of truth exercise over them all that sovereign authority which is its undoubted right, and which its Grecian fetters alone have hitherto prevented it from exercising. The precise mode in which I think this desirable result may be brought about will become apparent as I proceed.

It has already been pointed out that, by the principle of Contraposition, the implication $a : b$ is equivalent to the implication $b' : a'$. By changing b into b' , and therefore b' into b , these give us two other implications $a : b'$ and $b : a'$, which are also equivalent to each other. And when two implications are equivalent their *denials* are also equivalent. Thus $(a : b)'$ is equivalent to $(b' : a')'$, and $(a : b')'$ is equivalent to $(b : a')'$.

These denials of implications I have in my second paper in

the *Proceedings of the Mathematical Society* called *non-implications*; and instead of the accent to express negation I have used as the denial of : the symbol \div . Thus $(a : b)'$ and $a \div b$ are symbols which have exactly the same meaning, each asserting that the statement a does not imply the statement b , or, in other words, that a may possibly be true without b being so. I shall use the latter symbol in the rest of this paper.

All possible valid syllogisms, including the 19 syllogisms usually given and many others besides, come either directly or by the substitution of equivalents under one or other of the following four standard-implications, which are however more general than the syllogisms, since they are not like the latter restricted to mere classification:—

$$\begin{array}{l} (a : b)(b : c) : (a : c) \dots \dots \dots (1) \\ (a : b)(b : c) : (a \div c') \dots \dots \dots (2)^1 \\ (a : b)(a \div c) : (b \div c) \dots \dots \dots (3) \\ (a : b)(a : c) : (b \div c') \dots \dots \dots (4)^1 \end{array}$$

This is shown in my second paper in the *Proceedings of the Math. Society*, to which the reader is referred for a full and formal proof. I shall content myself here with giving one or two illustrations of the way in which syllogisms may be thus converted into implications.

Take the syllogism called Barbara, "All Y is Z , and all X is Y ; therefore all X is Z ".

Now by the first premiss, "All Y is Z " is meant that every single individual that possesses the attribute Y (or belongs to the class Y) possesses also the attribute Z (or belongs to the class Z); and the other premiss and the conclusion may be similarly interpreted. No matter who or what any individual may be, we are told in the first premiss that if it possesses the attribute Y , it also possesses the attribute Z . In other words, speaking throughout of some originally² unclassed individual, we are told that the statement "It possesses the attribute Y " implies the state-

¹ The statement a is here understood to be a *consistent* statement, i.e., a statement which *may* be true. When this restriction is removed the second of the above implications should be written

$$(a : b)(b : c) : (a \div c') + (a : 0),$$

and the fourth should be written

$$(a : b)(a : c) : (b \div c') + (a : 0).$$

This note has been suggested by some friendly criticism of my logical system with which the Rev. J. Venn has kindly favoured me.

² The mathematical reader will notice the analogy between this representation of a whole class by a single individual possessing the distinguishing attribute of the class and the representation in analytical geometry of a whole series of points or locus by a single specimen-point belonging to this locus.

ment "It possesses the attribute Z "; so that if y denotes the first statement and z the second, we have the implication $y : z$, which may be read "If any individual possesses the attribute Y , it must also possess the attribute Z ". In like manner "All X is Y " may be expressed by the implication $x : y$, and "All X is Z " by the implication $x : z$. Speaking throughout therefore of some originally unclassed individual, the syllogism becomes

$$(y : z)(x : y) : (x : z).$$

If we change the order of the premisses, this becomes

$$(x : y)(y : z) : (x : z),$$

which may be read "If any individual possesses the attribute X , it must also possess the attribute Y , and if it possesses the attribute Y , it must also possess the attribute Z . Consequently, if it possesses the attribute X , it must also possess the attribute Z ." In this form the syllogism is an example of the first of the four standard-implications given above, for we only substitute x for a , y for b , and z for c .

Take next the syllogism called Fresison, "No Z is Y , and some Y is X ; therefore some X is not Z ".

As before let x, y, z respectively denote the three statements that a certain individual belongs to the class X , that it belongs to the class Y , and that it belongs to the class Z . Then "No Z is Y " is equivalent to the implication $z : y'$, which may be read "The statement that an individual belongs to the class Z implies that it does *not* belong to the class Y ". The second premiss "Some Y is X " is equivalent to the *non-implication* $y \div x'$ or $(y : x')'$, which may be read "The statement that any individual belongs to the class Y does not imply that it is excluded from the class X ". From these two premisses, on the understanding that the same individual is spoken of throughout, follows the conclusion expressed by the implication $x \div z$ or $(x : z)'$, which may be read "The statement that an individual belongs to the class X does not imply that it belongs to the class Z ". The symbolical expression of this syllogism is therefore

$$(z : y')(y \div x') : (x \div z).$$

This may be brought under the third of the four standard-implications given above as follows. By the principle of Contraposition (or transposition) we get $(z : y') = (y : z')$. Substituting and reading y for a , z' for b , and x' for c in the third standard-implication we get

$$(y : z')(y \div x') : (z' \div x');$$

and the conclusion $z' \div x'$, by the principle of Contraposition, is equivalent to $x \div z$.

It is needless to give any more examples. The method of

conversion is the same throughout. Each premiss of a syllogism is expressed as a simple implication or non-implication, and the whole syllogism thus becomes a complex implication. The principle of logical Contraposition, which bears a remarkable analogy to the rule of "transposition" in algebraical equations, is appealed to frequently. By this principle we may transpose the antecedent and consequent of any implication, provided we at the same time *change the sign* of each. By "changing the sign" of a statement I mean affixing or removing the accent of negation. Thus, by Contraposition, the implication $x : y'$ is equivalent to the implication $y : x'$; and the non-implication $x \div y$ to the non-implication $y \div x'$. In both cases of equivalence the unaccented x moves from the left to the right and *assumes an accent*, while the accented y moves from the right to the left and *drops its accent*.

No part of logic has received so much attention and given rise to so much discussion as the syllogisms of Aristotle. This is why I have selected them as illustrations of the application of my symbolical method. A far more important subject of application however is the great and ever recurring problem of physical science—how to discover the general laws which regulate the various phenomena of the material universe. How logical symbolism may be systematically and advantageously employed even in those difficult researches and in cases quite beyond the reach of the ordinary mathematical symbolism has been briefly indicated in my third paper, published in the *Proceedings of the Mathematical Society*.

The reader will observe that the whole of my symbolical system of logic rests upon very simple and easily grasped principles. Though this system does not necessarily exclude metaphysical considerations, it is both theoretically and practically independent of such considerations, and rests upon a surer and firmer basis because it is thus independent. It may be a branch and a very important branch of *applied* logic to investigate the primary source and origin of the knowledge which we find existing in our mind, but it certainly is no part of *pure* logic. *Pure* logic must take this knowledge for granted. We must reason from the known to the unknown whatever be the subject of investigation, and it is the proper and special function of pure logic to explain how this may be done most safely and most certainly. If teaches us (if I may be allowed the metaphor) how to use our intellectual oars and steer the boat of reason whatever be the direction in which we wish to travel, and without troubling ourselves as to the exact source of the river on which that boat is moving. A short distance up this river we may be able to go, in spite of the strong opposing current,

and we may even succeed in tracing to its source a little tributary here and another there ; but up the river or down the river the motion of the oars is always the same, and it is by the help of the water within their sweep that the boat is ever propelled onwards into new positions. It is through and by means of the knowledge expressed by the *antecedent* that the reason reaches the knowledge expressed by the *consequent*. The latter becomes a means and medium of progression in its turn, and so the reason moves onward from knowledge to knowledge.

Just as my symbolical method, though not necessarily excluding metaphysical considerations, is yet independent of such considerations, so, though it does not necessarily exclude inquiries into grammatical distinctions, it is yet independent of all such distinctions. Grammar, like metaphysics, may be an important branch—indeed it *is* an important branch—of *applied logic*, but, like metaphysics and many other special subjects of investigation, it is no essential part of *pure logic*. The student of pure logic need know nothing of grammar, absolutely nothing. The grammatical structures of sentences are matters with which he has no special concern. His business is to investigate the logical relations in which *statements* stand to each other, and if he understands the exact meaning of each statement that enters into his argument, he need not trouble himself as to the exact form of words in which that statement is expressed. Nay more ; the statements of his argument need not be expressed in words at all. If he understands their meaning singly and collectively, it is enough. Any sign or symbol that conveys any intelligible information to the mind may be regarded as a *statement* so far as the logician is concerned with it. The deaf and dumb make use of many signs among themselves (apart from their regular alphabet) which in this sense are real statements, and if sufficiently numerous might answer all the purposes of ordinary speech in any logical argument ; and yet these are statements which cannot easily be resolved into *subject* and *predicate*. Much has been written in praise of, and a good deal has been written in disparagement of, Hamilton's logical scheme called the "Quantification of the Predicate". Prof. Jevons, in his *Elementary Lessons in Logic*, speaks of the scheme in terms of high approval. Mr. Ellis, on the other hand, in the *Educational Times* for August, 1872, calls it "an unfortunate conception" and "a barbarous abuse of language". My system, which adopts full and complete *statements* as the ultimate constituents into which any argument can be resolved, steers clear of the discussion altogether. At the same time, though it does not recognise the question as in any way an essential one, or one properly belonging to pure logic at all, it is

not on that account debarred from discussing it if it so chooses. It certainly is worth remarking as a matter of some interest, though not as a matter of paramount importance, that Hamilton's "All X is all Y " is expressed by the equation $x = y$, which is equivalent to the compound statement $(x : y)(y : x)$; that his "All X is some Y " is expressed by the compound statement $(x : y)(y \div x)$; that his "Some X is some Y " is expressed by the compound statement $(x \div y)(x \div y')$; and that all his other "quantifications" may be similarly translated into the language of my calculus. In this translation the letters x, y, y' are to be understood in the sense which I attached to them when discussing the syllogism; that is to say, they all denote *classifying statements*, referring to some one originally unclassed individual as their common subject.

I think I have now sufficiently explained the fundamental principles on which my Symbolical System of Logic is constructed, though not the rules of symbolical operations which are founded upon these principles, nor yet the various practical applications of which the method is capable. A full and detailed account of these, such as I have given in the *Proceedings of the Mathematical Society*, would be altogether beyond the aim of the present paper. In explaining what I believe to be the advantages of my own system, I have carefully avoided drawing any comparison between it and other systems which are already before the public. With two of these, Prof. Boole's and Prof. Jevons's, it has much in common, but it has been conceived and developed quite independently of theirs, and the points of difference which distinguish it are fundamental and important.

HUGH MCCOLL.

IV.—THE PHILOSOPHY OF REFLECTION.

THE two volumes by Mr. Shadworth Hodgson, under the title of *The Philosophy of Reflection* (Longmans, 1878), complete for him a cycle of thought, whose earlier stages were marked by the issue of *Time and Space* in 1865, and *The Theory of Practice* in 1870. The present work constitutes a system of which the former ones contained the grounds and preparations. It goes over some of the same subjects as they did, corresponding to a greater extent with *Time and Space* than with *The Theory of Practice*, and adds some new matter, especially suggestions toward a Constructive Branch of Philosophy. In endeavouring to estimate the author's position as a philosopher, it will be best to

deal chiefly with the latest and systematic work, referring occasionally to the others (which have been longer before the world) for illustrations and details.

The results of many years' devotion to philosophy, with eminent ability and ample learning, require no terms of general commendation. Let us proceed at once to the examination of one of the most serious speculative efforts of the present generation.

Probably Mr. Hodgson intends that his system should be known as the Philosophy of Reflection just as Kant's is known as the Critical Philosophy, and Reid's as the Philosophy of Common Sense. The characteristic of his doctrine, he says, in relation to the History of Philosophy, is the principle of Reflection (p. 8). Let us then begin by inquiring what is meant by Reflection, what is its principle and its method. Reflection we read (p. 6) is "the moment of distinguishing the objective and subjective aspects of phenomena". Every phenomenon, as I understand, has two aspects, an objective and a subjective; objectively it is a thing or entity, subjectively a state of consciousness or feeling, or group of feelings. The principle of Reflection is that these aspects of phenomena, though distinguishable, are inseparable; and to become aware of their inseparability as a general truth, to bear it constantly in mind is "to elevate the act or process of Reflection into a method" (p. 57). Or, again, "A thing *is* what it is *known as*, this is the principle in its objective formula; the objective and subjective aspects are inseparable, this is its subjective formula" (p. 149). In employing the method of Reflection, "we continually ask what we mean by such and such terms, what is the analysis of such and such percepts" (p. 57): for instance, what do we mean by Number, Motion, Cause, Force, Matter, &c. (p. 44).

To many readers this may appear an excellent foundation for a system of metaphysic. It certainly seemed so to me; but since in other writers similar expressions have raised hopes that have not been fulfilled, we must inquire more closely into the meaning of the principle of Reflection. What is intended by the objective and subjective aspects of a phenomenon? "Aspect, as a philosophical term, means a character coextensive with and peculiar to the thing of which it is an aspect." "In philosophy there is one ultimate pair of aspects which are universal and necessary, Subject and Object" (II., p. 20). "Phenomena is a term for the union of these two aspects, being a word which expresses both, *things that appear*" (p. 22). Since then these aspects are universal, and since the word phenomenon means the union of them, it is plain that in Mr. Hodgson's view every phenomenon has both an objective and a subjective aspect.

Tooth-ache, for example, is a phenomenon, and must have both aspects ; it is not merely that a subjective ache is related to an objective tooth, but the ache itself is both subjective and objective ; objective when you view it as a thing felt, subjective when you reflect that it is a feeling. "States of consciousness," says the author (*Time and Space*, p. 7), "when reflected on, are as objective as external phenomena." To speak of a pleasure or pain as objective or as a thing felt sounds a little harsh ; and it is already plain that the terms subjective and objective have not, in Mr. Hodgson's vocabulary, the same meaning as in the writings of (say) Mr. Spencer or Prof. Bain. In their view these words signify two orders of feelings or states of consciousness which are distinguished as orders by certain characteristics ; and if their lists of these characteristics do not coincide, neither do they conflict. But, says Mr. Hodgson, "in my view . . . the philosophical as opposed to the psychological view, feeling, so far from being the common genus of the objective and subjective aspects, is a name for the subjective aspect alone, and its obverse, the objective, aspect is existence." From which it seems fair to infer that a tooth-ache viewed objectively is not a feeling, and viewed subjectively is non-existent. We shall hereafter meet with many of Mr. Hodgson's doctrines which cannot be understood without extreme care in seizing the peculiar sense in which he uses some of the commonest philosophical expressions.

With the fundamental principle of Reflection another important doctrine of Mr. Hodgson's philosophy is closely connected, namely, the distinction between *nature* and *history*, whereby Philosophy is divided from Science. Those who understand by object and subject two contrasted orders of feelings frequently regard them as conditions of one another. For instance, subjective representations of tables formerly observed are a condition of fully cognising the present objective table. But in Mr. Hodgson's view it is one of the most serious mistakes that can possibly be made to regard the aspects of a phenomenon as its conditions, or as conditions of one another (II., p. 5). The conditions of a phenomenon are whatever stand to it in some definite time and space-relations, and this can never be said of its aspects which, though distinguishable, are both of them the identical thing. Again, of this present phenomenon, the table, object and subject, if we mean vivid and faint feelings, may be said to be elements, since it is constituted by the coalescence of present vivid sensations with the representations of former similar sensations in similar relations. But Mr. Hodgson distinguishes the aspects from the elements of a phenomenon thus : The objective and subjective aspects of a phenomenon being

identical, its elements must be the elements of its subjective aspect, and these are (1) the material element, feeling, and (2) the formal elements, time (since every feeling has duration), and space if the feeling is tactful or visual. Now, the aspects and elements of a phenomenon constitute its nature ; its conditions are its history : and whilst an inquiry into its nature is Philosophy, an inquiry into its history is Science. Moreover, inasmuch as to inquire into the nature of a thing is to analyse it, it is the distinction of Philosophy to be analytic. "The nature, analysis, or whatness of any thing is double, subjective and objective. This belongs to reflection and to philosophy. The genesis or history of any thing is not double, but of two separate kinds ; there is the history of the thing itself and the history of our knowledge of the thing" (I., p. 71). The former is the science of material things, the latter is Psychology.

I do not think Mr. Hodgson means to deny to chemists the rights of analysing compounds without being accused of metaphysics ; for it is another distinction of philosophy to be subjective (p. 75). But it seems that psychologists must not analyse, or at least not indulge in ultimate analysis, since to be ultimate is another philosophical distinction (p. 75) ; and perhaps not analyse states of consciousness at all, "unless in reference to their conditions in the organism" (p. 54).

Both these doctrines, the principle of Reflection and the distinction between Nature and History, are very important, though we may not agree with the way in which Mr. Hodgson states them, nor always with the way in which he applies them. The principle of Reflection, expressed as the mutual dependence or implication of the objective and subjective orders of feelings, is a most commanding position for metaphysical criticism. And *Reflection* is a good name for it; for if not directly very expressive, it at least need not occasion misunderstandings, as *Idealism* does, so that well-instructed writers may still be found arguing as if Idealists supposed that phenomena were unreal, though that was never a tenet of the best modern empirical Idealists. Reflection, then, gives an actual analysis of the world, or, in other words, reveals its nature. But no sooner is this displayed than it is confronted with the history of the world as elucidated by the physical sciences, according to which subjective phenomena are a comparatively recent addition to it. This antagonism is the most serious in the whole range of speculation. Some such terms as *Reflectional* and *Cosmological* would, I think, designate the conflicting views better than *Nature* and *History*.

Upon the strength of this distinction Mr. Hodgson describes himself as an "Idealist (or rather *Reflectionist*) in Philosophy;

Materialist in Psychology, and indeed in all the sciences. The causes and the genesis of this and that individual conscious being, as well as of each and all the states and processes of his consciousness, depend upon matter in motion" (p. 226). To explain the origin of matter is a problem which he refers to the constructive branch of Philosophy, which remains to be constituted; and meanwhile he does not, that I can discover, draw any distinction with respect to certainty between the conflicting views. Coherent thinking, however, must, I think, force us to admit that the principle of Reflection is an unmistakable fact, and the cosmological doctrine merely a hypothetical representation or ideal construction.

For Mr. Hodgson's doctrine that analysis is the method of Metaphysics, and not of Psychology, there is much less to be said. Psychology cannot get on without analysis, which is often, perhaps usually, preliminary to an inquiry into conditions; nor can Metaphysics dispense with the help of an inquiry into conditions, which in its turn is often a great aid to analysis. To attempt to separate these processes is to refuse to recognise any but direct analysis by simple inspection; but a thorough direct analysis may be impossible, whereas an indirect analysis by means of a synthesis of hypothetical conditions may suggest what we should look for and bring to light elements before unseen. Of this Mr. Hodgson himself supplies a good example, no other than the mode in which he analyses, or at least expounds the analysis of, the moment of Reflection.

We know what it is, he says (I., p. 108) to find ourselves having feelings and thoughts and in the presence of objects. "This total state of mind clearly contains the object to be analysed, the moment of self-consciousness itself," or reflection. And we may distinguish in the total state "three things, the person having the feelings and thoughts; the objects around him; and the feelings and thoughts themselves. Now, it is a well-attested fact of observation that infants have feelings and thoughts without having the perception of *themselves* as persons." I wish Mr. Hodgson had remembered just here what he often insists upon, the difference between inference and observation, and had called this "fact," instead of "a well-attested observation," an inference impossible to verify; for only infants can have observed it, and their attestations are still wanting. However, if it is a fact, the three things mentioned above, persons, objects, and feelings, are reduced to two, and there may be a state of consciousness comprising only feelings and objects. But further, Mr. Hodgson infers from the circumstances of low organisms and other data, that consciousness originally comprised only one thing, namely, feelings—feelings which had no

reference either to persons or to things. This state he calls "primary consciousness"; and having thus discovered the antecedents or conditions of the moment of reflection, returns to it by synthesis thus: "In some way or other the perception of independent objects, and the perception of a percipient subject supervene upon, or are developed out of, these primary states. There is no other alternative. For since neither objects nor self are given alone, *per se*, and also are not given along with the primary states originally,—there must be a time or 'moment' of change, in which primary states of consciousness receive a modification and pass into states either of self-consciousness, or of consciousness of objects, or states which are both together." "The first and simplest reflection which arises in the primary consciousness of an infant," then, is this: "These thoughts and feelings are not only thoughts and feelings, but bundles of constantly connected thoughts and feelings, that is, 'things'; . . . without ceasing to be *states of consciousness*: . . . that which was undistinguished has, I now see, a distinction into consciousness and object of consciousness." Here Mr. Hodgson's point seems to be, that at some period a change takes place in primary consciousness, such that feelings and thoughts are perceived to be also things; though so much, I think, was never recognised of all feelings and thoughts. This is the moment of Reflection: and after this, consciousness reaches another stage, at which feelings and thoughts on the one hand and objects on the other, though really inseparable, are regarded as separate and independent entities; so that now feelings and thoughts are referred to an immaterial substance, and objects to an external world (p. 115). This third stage Mr. Hodgson calls "direct consciousness". It is, he says, the mental attitude of men generally, of science as contrasted with philosophy, and of bad philosophy as contrasted with the philosophy of Reflection.

Upon these passages I observe, in the first place, that they contain a clear case of an analysis assisted by an inquiry into conditions. And, secondly, I must confess myself unconvinced that primary, reflective, direct, is, as Mr. Hodgson maintains, the necessary order in which these stages of consciousness succeed one another. He says that we must take primary consciousness as prior in order to "avoid any unfounded assumption". But one would have supposed that the only way of avoiding unfounded assumptions was to begin with the principle of Reflection,—the mutual dependence of the objective and subjective orders of feelings. Starting from this fact, now ascertained, we may try to imagine the modes of consciousness which preceded its determination: we may suppose the priority of "primary consciousness," as a psychological hypothesis from

the cosmological or historical point of view; we may suppose the gradual differentiation of the objective and subjective orders of feelings out of that comparatively homogeneous flux ages before conscious reflection supervened; we may trace the formation of direct consciousness, and perhaps explain the rise of ontological systems; until, as the late result of Psychological analysis, the principle of Reflection, that rock of our present sure foundation, is discovered, and a footing secured upon it for sound Metaphysics.

With the insight now won into some of Mr. Hodgson's fundamental principles, we are prepared to consider his solutions of particular problems. Let us begin with Existence; which seems to have a reasonable priority, because it is "a notion not peculiar to any one science, but common to all, and involved in the particular ultimate notions of each". What, then, do we mean by Existence? "In general terms it may be said that, for philosophy, existence means presence in consciousness, *esse* means *percipi*; and this quite generally, so as to include all the modals into which the general proposition may be thrown; as, for instance, possible existence designates what is possibly present in consciousness; &c." (I., p. 49). This looks very sound: but then feelings must be present in consciousness, and a passage from Vol. II. has already been quoted in which Mr. Hodgson says, that "feeling is a name for the subjective aspect alone, and its obverse, the objective aspect, is existence:" and, adding this passage to the last, it might be supposed that feelings were not present in consciousness. Moreover, the last passage continues thus (I., p. 50): "For all modes of existence there are corresponding modes of presence in consciousness". Here modes of existence seem to be not identical but only correspondent with modes of presence in consciousness; which at first suggests some such ontological realism as Mr. Hodgson abhors, but seems to become a contradiction when we remember that existence has just been defined to mean presence in consciousness.

These difficulties would not, I believe, have arisen if Mr. Hodgson had taken subject and object to be the two contrasted orders of feelings or phenomena, instead of two aspects of every phenomenon. He might then have defined existence to be whatever enters into a relation of object and subject. And in fact this seems to be his real meaning; for he says (II., p. 48), "The subjective aspects of material objects exist as well as the objects themselves; and states of consciousness such as are the emotions and feelings of pleasure and pain, which have no material objects, yet exist for the subjects of them. Subjective states and objective things, then, are both alike existents" (*cf.*, p. 112). And at p. 76 he says, that states of consciousness

are existents, though "of a peculiar kind," that is, "not solids in motion". So that since this is clearly the best meaning of existence, and an author has perhaps a right to have his best meaning selected as the only true and genuine one, let us agree that in the Philosophy of Reflection existence and consciousness are coextensive. There is one world of phenomena which psychology calls consciousness, and the physical sciences existence; whilst the business of metaphysics is to explain to people that it is all the same, when they seem to be in danger of talking nonsense by forgetting it.

Next let us take the problem of Things-by-themselves. Mr. Hodgson says (I, p. 219): "The main problems of the analytical branch of philosophy—that is, of metaphysic, are, I conceive, two. The first is that of Things-in-themselves." And his way of disposing of Things-by-themselves is very short, but very effective. He shows that the notion of such entities necessarily springs from the exercise of direct consciousness. This attitude of mind involves the assumption at the outset of all investigations that something exists independent of consciousness. The mind, itself a thing apart, is assumed to come to things also apart, and makes inquiries about them: if its inquiries are not completely satisfied, if there remains an unexplained residuum in things, this residuum is called "unknowable existence," or the Thing-by-itself apart from consciousness and from the phenomena present in consciousness. Such is the consequence of relying on the direct attitude of mind. But when falling into the reflective attitude we inquire what after all we mean by existence, the Thing-by-itself, this substance or shadow which shape has none, ceases to haunt us: for we find that existence means presence in consciousness; so that there can be nothing apart from consciousness or from phenomena, no Thing-by-itself; and "unknowable existence" becomes a contradiction in terms (I, pp. 162 ff.).

Here we have certainly a short and easy method with Things-by-themselves: contrasting favourably in point of brevity and facility with the longwinded and sometimes obscure argumentation on the subject to which metaphysicians have hitherto commonly treated us. But when we ask what gives its efficacy to such a ready process, we see that Things-by-themselves are abolished by appealing to the definition of Existence and the principle of Reflection. This definition and this principle are, however, themselves results of the long and difficult arguments and analyses of former metaphysicians—arguments and analyses for which these volumes hardly contain an adequate substitute.

Still (some phrases apart) the result seems to be sound; some

of the stages of the argument by which it may be supported are well stated and illustrated by Mr. Hodgson ; and I particularly admire the boldness with which he has applied it to the Ego or mind, as well as to material substance. Having at p. 163 dismissed the subjective noumenon both as substance and as agent, he supposes himself at p. 225 to be asked : "Where do you look for the cause, the substance, the agent, the conscious thing (call it what you will), of consciousness ?" and he answers by taking the distinction between Nature and History. As to Nature, he says, "The nominal definition I would give of the soul or mind is—*a series of conscious states among which is the state of self-consciousness.*" As to History, "The agent or substance which becomes conscious, or in which resides the force of becoming so, or which *has* the states of consciousness, is not the series or any one or more of the states which compose it, but (in man) the brain or nerve substance." "The first cause that we can discover anywhere is matter in motion," and the origin of matter is a problem for the Constructive Branch of Philosophy. The prior condition of consciousness at large Mr. Hodgson does not profess to assign. Plainly such a topic could have no place in any coherent Philosophy of Reflection.

The question, however, arises, what is that "state of self-consciousness" whose presence amidst a series of conscious states completes what is called a soul or Ego ? It is, of course, not what is popularly called self-consciousness—the state of mind so natural and engaging in a Senior Wrangler or a *débutante*. At p. 50 we read, "We know existence as consciousness, and to know that we do so is self-consciousness". Now, to know existence as consciousness is to know it as feeling : self-consciousness, then, is the consciousness that feeling is coextensive with existence ; and self must be the sum of feelings, or the subjective aspect of phenomena in general. And somewhere, I believe, in the *Philosophy of Reflection* this is more clearly stated, but I cannot recover the passage. On turning, however, to *Time and Space*, p. 220, we read : "The Empirical Ego is the complex of all feelings or states of consciousness, as distinguished by Reflection from the qualities which are their objective aspect"; whilst the Pure Ego is "a continuous feeling or consciousness," which appears as abstract and general feeling—not, like the Empirical Ego, a series of determinate states (pp. 181-2).

From all this it is manifest that Mr. Hodgson has rid himself of the notion that the Ego is a mysterious something apart from phenomena. Will, he says, like force, on analysis vanishes as an entity : it is an expression for *action* in conscious beings (II., p. 283). I cannot maintain that his language is always

easily reconcilable with this view : but that is partly, at least, because common forms of speech, being suited to the expression of direct consciousness, involve the assumption that self is a substance and cause. It would be a great service to metaphysics if some thinker would set himself to frame a variety of expressions which might be substituted for those of popular language, where the latter involve this and similar assumptions which must be rejected by Reflective Consciousness.

On the other hand, I cannot think that Mr. Hodgson has done well in making the Ego or Self coextensive with existence. This was indeed the natural result of the position that every phenomenon has a subjective aspect. But those writers appear to me to hold a simpler position who, regarding object and subject as contrasted orders of phenomena, have it open to them to identify the Ego with the subjective order. And I cannot help asking Mr. Hodgson whether, if the Mind or Ego is a series which contains the state of self-consciousness, there is no Mind, Soul, Self, or Ego in primary consciousness whilst the moment of reflection has not yet occurred.

The second problem of the analytic branch of philosophy "is identical in purpose with that which Kant proposed to himself, and which he formulated by the question, 'How are synthetic *a priori* judgments possible?' . . . The problem may be designated as that concerning the strict and inviolable necessity of the Law of the Uniformity of Nature ; of the principle of *Ratio Sufficiens* ; or of the Law of Causality ; to find, if possible, a metaphysical basis for the Sciences, &c." (I, p. 220). Mr. Hodgson undertakes to demonstrate such a principle from the postulates of Logic taken in conjunction with the phenomenon of Reflection ; and he leads up to the demonstration by an elaborate analysis and criticism of the cognitive process of consciousness. Leaving these preparatory topics, which do not seem essential to the intelligibility of the result, we will pass at once to the author's solution of the problem of the inviolability of Nature's uniformity. It occupies the greater part of two chapters towards the middle of Vol. II.

Mr. Hodgson contends that, in the first place, it follows from his former position concerning Existence and Things-by-themselves, that the Postulates of Logic, i.e., the Principles of Identity, Contradiction, and Excluded Middle, apply to the whole of existence, as existence is understood in the Philosophy of Reflection, to the whole of existence, and to every part of it, however vague or however minute. He then proceeds to prove that the Postulates of Logic carry with them and involve the Axiom of Uniformity, so as to compel us to regard it as of equal validity with themselves. The three Postulates, hang together,

are aspects of each other, expressing one and the same fact ; but since the Axiom of Uniformity is a positive statement, it can only be compared with the positive postulate, that of Identity. It has to be shown, therefore, that the Postulate of Identity involves the Axiom of the Uniformity of Nature.

A is A : let this be granted, and it is impossible to deny that A always has been A , and always will be A . In the Postulate of Identity the copula must be considered as free from all restrictions of tense, so that the statement is perfectly general. A is A , no matter where or when. And thus interpreted, I understand Mr. Hodgson to maintain that the Postulate is identical with the Axiom of Nature's uniformity, because were it possible that A should not be A , Nature would not be uniform.

There are indeed, Mr. Hodgson admits, two ways of regarding the Axiom : first, as stating that Nature is uniform ; secondly, as stating that the *course* of Nature is uniform ; but these are respectively only the static and dynamic aspects of the same truth ; and both flow equally from, or rather are "the phenomenal aspects of the postulates". They correspond with two ways of looking at the nexus of events in Time, namely, either transversely, as if events were a panorama of figures in adamant which knew neither origin, change, nor dissolution, fixed and coexistent in an eternal Now; or else, longitudinally, as a stream or insubstantial flux of things, or as transformations in the ethereal body of a cloud, appearing and disappearing between the past and hereafter. Viewing Nature in the former way, we are to speak of the axiom of its uniformity ; viewing it in the latter way, to speak of the axiom of the uniformity of the *course* of nature is more appropriate.

Another "difference of the two axioms is that the one envisages single percepts, the other envisages sequences of percepts". The first states, that every A is A ; the second, "that whenever A is found it will be followed or accompanied by the same thing B , as it was the first time". Though this last phrase is, if I understand Mr. Hodgson, a slip ; since it is not necessary, I suppose, that A should ever occur twice ; and he rather means that whenever A is found it is followed or accompanied by a certain B , without which, in fact, it would not be A . "For," he goes on, "if A were followed by B yesterday, and by not- B to-day, there would have been some relation in which A stands now, which it did not stand in before ; that is, A would not have been strictly the same A in the two cases (II., p. 108).

Such is Mr. Hodgson's demonstration of the axiom of Uniformity from the postulate of Identity. It has plainly been obtained by regarding the axiom as an identical proposition,

That such would be the result every reader who has already threaded many a similar labyrinth, must from the outset have undoubtfully foretold. Mr. Hodgson ought to state the principle of causality somewhat in this way : Every cause, determined in relation to a given effect, always has that effect. And this is not unlike the familiar argument, that every effect must have a cause, since otherwise it would not be an effect. Whereas when we say that the same cause has uniformly the same effect, or that the same event occurring in the same circumstances has always the same consequence, we of course mean, if we mean anything, that the cause or antecedent event is to be thought of as the same in itself and in its circumstances apart from its effect or consequence. This is what those who try to think accurately usually mean to say¹; but it may perhaps be questioned whether such a meaning does not necessarily involve inaccuracy of thought.

A is A ; A is followed by B : but what is A ? A is never isolated. Can we know A apart from B ; or think of A without a latent reference to B ? Can A even exist except in relation to B ?

As to the former question, whether we can know or think of A except with reference to B,—either we can do so, or else we cannot think of A at all. For, first, if we cannot know A apart from B, we cannot know A until B has arisen, and then A has already disappeared. And, again, unless we can know A apart from B, neither can we know B apart from C, nor C apart from D : from which it follows that we cannot know A except as A, B, C, D, &c. ; that is, in relation to the whole of existence. And thus the harmless-looking proposition, A is A, turns out to mean that A in relation to the universe is A in relation to the universe ; and the principle of Identity, the so-called first law of thought, becomes quite unthinkable. The truth seems to me to be, that Identity is an affair of definition. There is no principle of Identity, because we need a convention as to the meaning of the word. Mr. Hodgson, for instance, thinks that similarity and sameness are to be explained by reference to identity (II., p. 145), whilst he admits that identity is never empirically determinable ; that is, he would explain the known by the unknown. On the other hand, it might be suggested that identity is to be explained by reference to similarity, and means a certain complex sameness.

Now, in the Philosophy of Reflection things are what we mean by them, or what consciousness faithfully consulted reveals them to be. This applies to knowledge as well as to anything

¹ Except, perhaps, Hobbes : cf. *De Corpore*, Part II., c. 9.

else. Knowledge is what we mean by knowledge ; and we do not mean omniscience. Therefore a knowledge of A does not mean of A in relation to the universe, and therefore not necessarily in relation to any particular B. Knowledge is always partial ; and although a partial knowledge of A requires, according to the law of relativity, a knowledge of some not-A, still this is also a partial knowledge, and needs not include B.

A similar solution applies to the question whether A can exist except in relation to its consequent B. As a matter of fact A does exist before B, and therefore apart from it ; and when B comes into existence A vanishes, and is swallowed up in B. That is what we mean by causation. If Mr. Hodgson urges that this may be so, viewing time longitudinally as a flux ; but that, viewing time transversely, A and B may really coexist in the eternal Now, and only seem to be successive from our incapacity to experience them otherwise,—one must reply that such a speculation as this about statical time has no place in the Philosophy of Reflection. What do we mean by time ? It is certainly hard, nay, impossible to say. Of that mature sense of time which is at once as clear as an intuition and as massive as an emotion, it is indeed possible to give an analysis and description. But of the time-element, so to speak, of which the sense of time is a clarified accretion, no account can be given : it is an ultimate experience, the most ancient and simple of all that we know. This, however, one may say, namely, that time is not space, but in every way contrasted with space. Yet it is difficult to help suspecting that the curious speculation about statical time entirely arises from a confusion of time with space ; a confusion greatly favoured, and made almost unavoidable except to the most resolute clear-headness, by our common modes of measuring time by means of space and motion ; by the entanglement of space and time in their psychical genesis ; and by the fact that with time, as with other things, when we try to think of it we try to look at it, and we can see anything only as in space. Hence we often speak of time as having one dimension, and perhaps think of events in the past as still existing at the further end of a tunnel with darkness between. Mr. Hodgson distinguishes between the thread of time and the various concepts or percepts through which it runs ; he speaks of "the time-thread always going on whatever may be the content" ; he says "a percept is a portion of time filled with consciousness" ; he suggests that time may have a second dimension, as well as space a fourth ; he asserts, "there is no absolute first and last in time, just as there is no absolute up and down in space". But dimension is a word to analyse space with, and is only metaphorically used of time :

time, strictly speaking, has no dimension ; no existence but in changes of consciousness which are nowhere ; and these changes have an actual succession, which is absolutely irreversible. To avoid the influence of misleading representations which can hardly be dispensed with, let us cancel one with another, and sometimes imagine time, not as a thread or stream, but as a twinkling iridescence in a plane, perpendicular to the thread, or (still better) in a point.

I should be sorry to do Mr. Hodgson any injustice ; and therefore I will say that possibly the passages upon which I have been commenting are intended less as a direct demonstration of the Uniformity of Nature than as an indirect metaphysical criticism of the limits of science and empirical thought : and regarded in that way they certainly contain much that is valuable and abundant suggestions. Only in this way, too, can one explain why at starting we are promised a metaphysical basis for science, and toward the end are instructed that the axiom which has been elucidated is only available in science on "the supposition of oneness taking the place of recurrence" ; in other words, that recurrent similars are identical, which, of course, they never are : that is to say, Mr. Hodgson has laid in philosophy a basis for science upon which, by his own showing, science does not and cannot be made to stand.¹

Turning to our author's treatment of the more special problem of Induction, we find him undertaking to show that induction is a case of syllogism, "when you take both syllogism and induction in their true sense, and analyse the lowest and simplest acts of each". In order to do this, "two things must be distinguished ; there is induction a *method* of investigation, and there are the several acts of observation, the facts observed brought together one by one, from which the method takes its name *induction*, ἐπαγωγή, or fact upon fact. The observation of a single fact is not, but the observation of two facts together is, an induction. Induction as a *method* depends on the use of hypothesis by

¹ Since this review was written, Mr. Hodgson has written an article (*MIND* XVI,) in further explanation of his views of Causation. He there observes that the elements of our notion of Causation are Uniformity and Efficacy. To seek the source of these elements he turns to the perceptual order, and finds the source of our notion of Uniformity in the similarity of all states of consciousness, amounting to sameness in respect of their Time-form ; and the source of our notion of Efficacy in the continuity of consciousness. In defining Cause, however, he carefully omits the elements of invariableness, and thereby (as it seems to me) uniformity as commonly understood.

It would have increased the interest of the article "On Causation" if its author had shown explicitly its relation to the discussions of similar topics in the *Philosophy of Reflection*.

imagination" (I., p. 346). At p. 305 he has explained that "an imagined order, in which facts already known find their place and their explanation, is a scientific hypothesis ; and the new facts ranged with the old under the hypothesis are an induction, and result in an inductive generalisation". But the analysis of induction as a method is into *acts* of induction, *i.e.*, acts combining two severally observed facts. "Now, I say," he continues (p. 346), "that the combining two severally observed facts is a process of reasoning which is syllogistic in its nature"; and he gives the following example—"This piece of Iceland spar has double refraction ; this piece of Iceland spar is a crystal ; therefore, this crystal has double refraction."

It must be admitted that the majority of logicians (against a minority of very respectable dissentients) would call this a syllogism ; but few would confound it with induction. "The several acts of observation, the observed facts, brought together one by one, from which the method takes its name induction," are always understood to be similar facts, such as may be the basis of a generalisation. And in a passage above-quoted Mr. Hodgson seems to agree with the common view that an induction results in generalisation. But that Iceland spar has the property of double refraction, and that it is a crystal, are different facts ; and how can any accumulation of such different facts ever lead to a generalisation ? That, however, is the very matter at issue. The question is not whether in the syllogism a conclusion can be drawn from two singular premisses, but whether the conclusion can be wider than the premisses ; whether it is possible to argue syllogistically from particular facts to a more general law. There have been several fallacious attempts at this, to which the above must be added.

On the whole, it is to be feared that both in solving old problems and in establishing new truths Mr. Hodgson has accomplished less than might have been anticipated from his conspicuous ability and his promising first principles. The reason perhaps is that he has aimed at greater independence than is permitted to mortals. To work effectively, men must pull together. The independent philosopher, who hopes to renew the universe of thought by his own creative energy, usually ends by galvanising old disputes and inventing new vexations. It is better to repeat an old truth than to formulate a new error. To repeat is to corrupt,—often, no doubt, unless with "a spirit and judgment equal or superior". But had not philosophers subordinated themselves in schools and begun with repetition, the common stock of metaphysical truth would still have remained what the taunting spirit says it has been in all ages. Audacity and docility are the Scylla and Charybdis of

inquiry ; and must themselves (if I may use so violent a figure), by a fortunate consent, direct the ship that safely sails between them. Only those have added to the edifice of knowledge who have had the docility to build upon foundations already laid, and the audacity to extend and improve the designs. And these are chiefly of two classes, the prosecutors of mathematics and the physical sciences, and English empirical philosophers. Their buildings, rising and strengthening with each generation, endure from age to age, and show like the dwellings of civilised men, compared with the tents and wigwams of wandering tribes.

Not that Mr. Hodgson has failed to study the works of his forerunners ; on the contrary, there are few modern English books which contain so much evidence as his do of extensive acquirements in the learning appropriate to their subject. In this respect his pages sometimes remind one of Schopenhauer's. But then he seems to regard the works of others as not so much sources of instruction as objects of criticism. And after all, perhaps, he does so from a true instinct ; for in criticism his power seems to lie. This was already plain in his work on *Time and Space*, which contains nothing better than the criticism of Hegel. The critical matter scattered throughout his volumes is very instructive ; and had criticism been made their central purpose, their value must have been greatly raised.

Hence he writes, of course, with a distinct idea of the relations in which his own system stands to others ; and he traces its genealogy through Maimon and Kant to Hume. Coleridge's influence by way of inspiration and suggestion he commemorates with gratitude. Beyond Hume his line runs back, I suppose, to Locke, in virtue of the doctrine that "the nexus of percepts is prior to the nexus of concepts"; and the same doctrine he presents as the fundamental distinction of his own philosophy in comparison with Hegel's. The post-Kantian absolutism he calls an episode in history ; but Hegel's influence upon him is everywhere manifest.

If, however, on the whole, his philosophy is a branch of the English school, it is one that departs from the main stem very near the roots. He necessarily separated himself from the principal disciples of Locke when at some early date he misunderstood the Laws of Association. In the *Philosophy of Reflection* he gives the following laws of "spontaneous redintegration": (1) The redintegration is a sequence at once continuous and discrete ; while in proportion to (2) its vividness, or (3) its frequency of recurrence, or (4) its pleasurableness or interest, is a feeling likely to recur. The first of these is similar to the law of general relativity ; and the rest are sufficiently familiar : but we miss from the list the

laws of similarity and contiguity.¹ For arguments in support of Mr. Hodgson's view of this matter the reader is referred to *Time and Space*, §§. 28, 29, 30; and *The Theory of Practice*, Vol. I., §. 53. On turning to the former passage, I find three arguments alleged to show that the laws of contiguity, similarity, contrast, and cause and effect, cannot be laws of spontaneous redintegration. In the first place, he observes, this list of laws "gives us no law of the preference of contrast to resemblance, contiguity in place or in time, cause or effect, or in short of the preference of any of these to any other of them; still less does it give us any law of preference within the selected category, or point out which among the causes or effects or objects resembling or in contrast is to succeed to the object with which we start". To this it may be replied: (1) That no one would now maintain that contrast and cause and effect are ultimate principles of association; and if we adopt Mr. Spencer's view, that likeness of relationality in time and place is the true basis of association by contiguity, the list of laws is reduced to one, and the first part of the above objection entirely destroyed. (2) Even if we admit both contiguity and similarity as ultimate principles of association, it must be remembered that the actual revival of a feeling seldom depends upon a single bond of association, but is frequently determined by the combined strength of numerous incentives, and that the successful feeling often seems to come triumphantly into consciousness only after a struggle with powerfully supported competitors. (3) "A law of preference within the selected category" is usually understood to be given, in that (other things equal) the revivability of feelings is proportionate to the degree of their likeness or of their former contiguity to the present feeling. (4) It is not to be supposed that psychologists maintain the laws of resemblance and contiguity, to the exclusion of the laws of vividness and frequency of occurrence; on the contrary, these latter circumstances are recognised as continually giving superior strength to some associations over others.

But it is to Mr. Hodgson's second argument that I wish especially to draw attention. Circumstances of resemblance, contiguity, &c., are, he says, "calculated to form links only in voluntary and not in spontaneous redintegration," because "the explanation supposes that I pass from one object of consciousness to another through the representation of a relation of a certain kind, a relation either of cause or resemblance or so on". No wonder that after this he objects, in the third place, that

¹ The laws of similarity and contiguity are, in the next chapter, recognised as true of "voluntary redintegration": but thus to narrow their scope is to miss all their value.

"supposing we did pass from one object to another through some one or other of these notions as the connecting link, we should still require an explanation of the link which connects that link itself with the reintegrating object or object beginning the reintegration". Undoubtedly; but where did Mr. Hodgson ever fall in with an empirical psychologist who dreamt that, before one feeling can suggest another resembling it, the general notion of resemblance must intervene? The law states, of course, that one feeling tends to suggest another like it by the particular fact of their likeness; or that, however it works, feelings do remind us of others similar to themselves. And similarly with the law of contiguity.

Entertaining such views of the meaning of the Laws of Association, it was impossible that Mr. Hodgson should go far in company with modern disciples of Locke; for it was impossible that he should well appreciate the profound truth of those laws, and their extensive powers of interpreting mental phenomena. On this account many of his psychological investigations are isolated from the main course of inquiry on the subject; and his analysis of the minima of consciousness, his explanation of memory, his criticism of reasoning processes, &c., though displaying much subtlety, fall short of the success which is due to such sincere efforts.¹

Let us now consider, in conclusion, the other side of Mr. Hodgson's philosophy. He makes it the distinction of his system, in comparison with Ontology or Absolutism, that it has, besides the analytic (of which we have hitherto treated), a constructive branch. Of this he treats in many passages, but especially in the Preface, in ch. i. § 3, and in the final chapter. Philosophy must, he says, embrace the whole of existence, and no philosophy can be true which does not enable "those who hold it to give the freest scope at once to their intellectual and their religious tendencies". Numerous attempts to build systems of the requisite breadth and height have been made by ontologists, but they have failed by proceeding always on a wrong method. Before drawing the outlines of his own construction, Mr. Hodgson examines the Scholastic or Church Philosophy in his penultimate chapter, and after giving many

¹ At the same time it must be said that the effort to the reader is greatly aggravated by the author's strange use of philosophical language. It is long before one can bring oneself to realise and believe that he means by Comprehension what others mean by Extension, and *vice versa*. For Intension he finds a new meaning, and quite justifiably, since it is absurd to keep two good words, Intension and Comprehension, to express the same idea. But as much cannot be said for his perversion of the word Concept; and we have already seen other instances of a similar procedure.

admirable proofs of what seem to me to be his special powers, concludes with these words :—

" If it is true that the fortunes of mankind, and even its continued existence are bound up with the maintenance of true morality in life and conduct, and that the maintenance of morality again largely depends upon its being enforced and vivified by religion, it becomes an imperative duty at all hazards to tear religion away from a dogma which sets it at variance with the free exercise of thought " [by imposing a forgone conclusion] " and weakens the authority of its sanction by undermining its claims upon the intellect. At the same time the other and positive side of the same task, the negative side being provided for, becomes more than ever important ; namely, to exhibit religion as not torn away from, but more closely than ever leaning on, its true supports in the unseen and eternal world ; and as, in this way, bringing to bear the whole weight of our conceptions regarding that world to uphold and sanction whatever conscience shall determine to be holy and just and good."

This task, then, remains to the Constructive Branch of Philosophy. But is there a Constructive Branch of Philosophy ? Is there an Unseen World ?

" To ask this question," says Mr Hodgson, " is one and the same thing as asking whether Time, Space, Feeling, the Postulates of Logic, and the Axioms of Uniformity, or any of them, have universal and necessary validity, that is to say, a validity beyond the particular combinations or instances of them with which we are acquainted in the actual world " (ii., p. 171 ; cf. p. 233). If this be admitted the seen and the unseen worlds together make up the universe ; within which their boundaries may be demarcated thus : " The seen world contains whatever is or may possibly become an object of *direct* perception and thought to beings constituted as men are. The unseen world contains all that is or may be an object of *reflective* perception and thought to beings constituted as men are, if at the same time this object is or may be an object of *direct* perception and thought to other differently endowed beings " (p. 236).

Now, Time and Feeling, Mr. Hodgson finds, must enter into the unseen world, since they are necessarily involved in reflective perception, and without them there can be no consciousness and no existence. The Postulates and Axiom, too, he argues, must hold good there ; but as to Space there is less certainty, inasmuch as it is not inseparably involved in all kinds of feeling but only in tactful and visual sensation, and we have no assurance that these specific modes of feeling obtain beyond the sphere of our own direct perception.

It must also be concluded that the unseen world has the characteristic of being capable of improvement ; for the distinction of better and worse is involved in the cognitive act ; and the cognitive act (at once action and cognition, the common source of practice and ethics, thought and theoretical philosophy) takes place whenever Time and Feeling come under the postulates. Attention, the first moment of cognition, is always expectance—expectance of something which it would be better for us to know, or feel, or do, than not.

"It may be said (continues Mr. Hodgson) on the other side, that we cannot conceive a better without a worse ; and that deterioration is therefore equally [with improvement] essential to our conception of existence. But though it is true that we cannot conceive the one without the other, yet (and this is what I mean to point out as remarkable), the order in which the two, better and worse, come forward in conceiving existence is fixed and essential to the conception. It is an order from worse to better, and not reversely. In the act of cognition the worse is first, the *terminus a quo*, the better last, the *terminus ad quem*; the worse is at the beginning, the better at the end. This constitution of the cognitive act is the basis of Teleology" (p. 253). And thus "with a full and manifold content of thought" the cognitive act becomes "effort to make the good prevail, expectation that it will prevail. It becomes the formation of ideals."

On the other hand, some facts of the seen world are not necessarily included in the unseen. The only personality, for instance, which is necessarily included in all existence is on the subjective side, whereas the unseen world is a part of the objective aspect. Immortality, too, is not necessarily a characteristic of that world. "The subjective aspect of the whole universe is sufficiently provided for by the individual's reflective consciousness here and now. It is not necessary to imagine this reflective consciousness existing objectively with an extent and duration equal to those of its objective aspect the universe." The inclusion of personality and immortality in the unseen world Metaphysical Analysis neither affirms nor denies : the affirmation, if possible, is possible only to Constructive Philosophy.

Mr. Hodgson next indicates the method and problems of Constructive Philosophy. The method is to assume a law of continuity, and to consider how the phenomena of the seen world may be supplemented and completed in the unseen. Thus, (1) as to the *form* of phenomena, there arise the problems whether other modes of form besides Time and Space may exist in the unseen world; whether Time may have a second, and Space a fourth dimension there. (2) As to the possible incompleteness of modes of *feeling and form together* in the seen world, we may inquire, what conditions in the unseen precede or accompany the origin of physical matter in space; or as to the connexion of consciousness with physical matter. (3) As to the completion in the unseen of modes of *feeling* uncompleted in the seen, our inquiry is limited to the possible completion and further development of the emotions, since in these the other department of feeling, the sensations, are themselves completed. And this inquiry becomes ethical; by which means alone the conception of a supreme intelligence or personality can be reached. Practical reasoning is teleological, aiming at ideals; and thus "inevitably and instinctively carries us over by its idealising method from the seen world to the unseen as containing its idealisation," and especially the

idealisation of emotion as that which most suggests the possibility of development.

"The imagery which embodies the reflective emotions consists in imagining those emotions to be felt and reciprocated by persons. When we idealise by intensifying those emotions, we introduce personality into the unseen world. . . . But the only way in which we can idealise personality, when intensifying its emotional soul or content, is on the one hand to abstract as much as possible from all corporeal attributes, and on the other to retain in the greatest strength all mental or spiritual attributes, whether of intellect, volition, or emotion. In this way it is that we imagine the ideal personality of God."

God cannot be regarded as a first cause ; for a cause, being separate from its effect, is limited by it, and therefore finite ; and a finite being cannot be God, because "we could not love with the whole mind and heart a finite Being, however powerful or beneficent". And "if we retain the word Creator to designate the spirit of the whole, it must be understood in a sense from which the notion of origination *ex nihilo* is excluded. It is coeval with the whole of which it is the spirit. Neither is it itself the whole, but only its informing spirit. It may be conceived as standing to the universe in the same relation as the mind of a man stands to the man and his earthly history."

These facts established by ethical reasoning concerning the unseen world, react upon practice, bringing to bear upon it the "sanctions of eternity". The judgments of conscience are enforced by the consideration, that actions done here may have in the unseen world consequences in which we may be sharers : and that superior intelligences, or a supreme being, may witness all that goes on in both worlds, the seen as well as the unseen. The practical maxim most fit to govern all application of ethical science is, "So act as if your action in all its parts, all its motions was witnessed by beings of perfect intelligence".

In this brief and necessarily inadequate exposition of Mr. Hodgson's Constructive Philosophy, I have abstained from criticism. The construction has plainly proceeded upon the ancient but discredited rule of architecture — to eke out one hypothesis with another. But this method of cumulative hypothesis is really a very difficult one to manage, though it looks easy and is proportionately seductive. For hypotheses about the entities or nonentities of metaphysical abstraction are less easy to remember than phenomena or laws of phenomena which can be really seen or imagined. This is the chief difficulty in establishing coherence in an ontological system. And this perhaps is partly why the last chapters of the *The Theory of Practice*, which treat of Practical Science, seem far better than anything Mr. Hodgson has done in Metaphysics or in Constructive Philosophy. In that one chapter which I have just been giving an account of, I find the following apparent incoherencies. At p. 254, the author says that personality is not necessarily included in the unseen world : but at p. 236 he had said that the unseen must

be an object of direct perception to other beings; and since reflection, *i.e.*, self-consciousness, precedes direct perception in his view, those other beings must be reflective, that is, persons. Again, at pp. 257-8, he says the subjective aspect of the universe is not necessarily equal to the objective in extent and duration, but in earlier passages formerly quoted he says "the objective and subjective aspects are inseparable"; "aspect is a character co-extensive with the thing of which it is an aspect"; "existence means presence in consciousness"; "feeling" (which is an element of the unseen) "is a name for the subjective aspect alone". Once more, at p. 279, he argues that God defined as First Cause would be a separable and therefore finite being; because, if I understand this point, he would be limited in relation to the world, his effect; but at p. 284, we find that God is not the whole universe, but only its informing Spirit. Now, that which is neither the whole, nor separable from it, must be a part, and therefore limited in relation to the remainder and finite. A finite being however we cannot, it is said, love with the whole mind and heart, and therefore such a being is not God.

It is a common saying that those who do not speak the truth need good memories; and (if such a comparison may be drawn without offence) so do those who deal in speculations to which the names truth and untruth are as inapplicable as to a fairy tale: in both cases for the same reason, namely, that they have to make a multitude of statements agree together without the vivid impressions and corrections of actual experience.

Speculations about an unseen world seem to be an innocent exercise of fancy by way of amusement. Starting from the hypothesis that a certain primary consciousness, a menstruum of sub-sensitive elements of mind-stuff, a sort of psychical nebula, preceded consciousness as we know it, there seems no absurdity in supposing that in other regions of the universe this has differentiated into other forms of consciousness such as we cannot at all conceive. The individual beings who participate in them may not live in space nor even in time, nor have bodies, nor any sort of sensation or feeling such as we should recognise, since all these are part of and developed along with our mode of consciousness. Again, even within the universe known to us in space, there may be animals whose forms of perception and inference are probably very similar to ours, whilst the matter of them, their lists of sensations, may be very different. This notion is familiar from *Micromégas*, and rendered surprisingly definite by the remark, that between the highest sensible sound, having under 40,000 vibrations a second, and the slowest sensible ray of light, having about

400,000,000,000,000 undulations a second, a vast number of rhythmic motions may exist, none of which have wrought any subjective correspondence in the human organism. It may, I suppose, be inferred that these unrepresented forces, if they do exist (which must depend upon the existence of an appropriate medium), are not of much use as signs or guides to inhabitants of our planet, or else a correspondence would probably have been developed by selection ; but they may be the most useful of all guides in some other world, and entirely fill the consciousness of its inhabitants.

Here then is a possible unseen world at two removes of intelligibility, and there can be no harm in indulging our fancy there, as long as it does not distract us from better certified realities. But is it conceivable that any religious inspiration should proceed from such surmises ; any "sanctions of eternity" (however deserving a meaner name !) or strength of motive to aid and not to injure the men whom we know to live and suffer ? From Time and Space, Feeling and the Postulates of Logic to the fear of God and the love of Man—how abrupt, how unnatural a transition ! There is nothing so irreverent as Metaphysics. The only unseen worlds whose dwellers, by the virtue of imagination,

"as from some far region sent,
Can give us human strength and strong admonishment,"
are the world of effort which has brought us hither, and the world of fellowship and justice which does not yet appear.

CARVETH READ.

V.—JOHN STUART MILL (IV.).

WHAT I have to say on Mill's ten years from 1848 to 1858 may be conveniently introduced by a reference to the *Autobiography*, p. 237. He states that for a considerable time after the publication of the *Political Economy*, he published no work of magnitude. He still occasionally wrote in periodicals, and his correspondence with unknown persons on questions of public interest swelled to a considerable amount. He wrote, or commenced, various essays on human and social subjects, and kept a watch on the progress of public events.

The year 1850 was chiefly noted for the first important revision of the *Logic*, namely, for the third edition. He had to answer many attacks upon it, including a pamphlet by Whewell. As I was absent from London while this was going on, I had a good many letters from him, chiefly on Whewell's criticism, of

the weakness of which he had a very decided opinion. I suggested some alterations and additional examples, but I scarcely remember what they were. The edition was printed in November; and no revision of anything like the same extent was undertaken till the eighth edition came out in 1872.

The *Political Economy* was subject to more frequent revisions, and occupied a good deal of his attention at one time or other, but I did not keep pace with him on that subject.

In spring, 1851, took place his marriage to Mrs Taylor. In autumn of that year, I took up my abode in London again, and remained there, or in the neighbourhood, till 1860. I continued to see him at intervals, in the India House, but he had changed his residence, and was not available for four o'clock walks. He could almost always allow a visitor fifteen or twenty minutes in the course of his official day; and this was the only way he could be seen. He never went into any society, except the monthly meetings of the Political Economy Club. On some few occasions a little after his marriage, Grote and he and I walked together between the India House and his railway station.

Only three of his reprinted articles belong to the period I am now referring to; but he must have written for the *Westminster Review* at least one or two that were not reprinted. I cannot help thinking that the failure of his energy was one chief cause of his comparative inaction. As an instance, I remember, when he first read Ferrier's *Institutes*, he said he felt that he could have dashed off an article upon it in the way he did with Bailey's book on Vision: and I cannot give any reason why he did not.

He wrote for the *Westminster*, in 1849, a vindication of the French Revolution of February, 1848, in reply to Lord Brougham and others. In French politics he was thoroughly at home, and up to the fatality of December, 1851, he had a sanguine belief in the political future of France. This article, like his "Armand Carrel," is a piece of French political history, and the replies to Brougham are scathing. I remember well, in his excitement at the Revolution, his saying that the one thought that haunted him was—Oh, that Carrel were still alive!

It was for the *Westminster* of October, 1852, that he wrote the article on Whewell's *Moral Philosophy*. What effect it had upon Whewell himself I cannot say; he took notice of it blandly in a subsequent edition of his *Elements of Morality*, in reviewing objectors generally, omitting names. John Grote thought that in this and in the "Sedgwick" article, Mill indulged in a severity that was unusual in his treatment of opponents. I could not, for my own part, discover the difference. Yet it is no wonder, as he told me once, that he avoided meeting Whewell

in person, although he had had opportunities of being introduced to him (I suppose through his old friend Mr Marshall, of Leeds, whose sister Whewell married).

In 1853, he wrote his final article on Grote's *Greece*, in which he enters with enthusiasm into Grote's vindication of the Athenians and their democratic constitution. He was, quite as much as Grote, a Greece-intoxicated-man. Twice in his life he traversed the country from end to end. I remember, when I met him at the India House after his first tour, he challenged me to name any historical locality that he had not explored.

In 1854, he had an illness so serious that he mentions it in the *Autobiography*. It was an attack in the chest, ending in the partial destruction of one lung. He took the usual remedy of a long tour, being absent about eight months, in Italy, Sicily and Greece. I remember Sir James Clark giving a very desponding view of his state; the local disease, however, he said, was not so serious as the general debility, and, in all likelihood, he never would be fit for any other considerable work. According to a remark made to Grote by Peacock, the head of his office, his absence was severely felt at the India House. He rallied, nevertheless, and resumed his usual routine.

In the year following his recovery, 1856, his two seniors in the Examiner's office retired together, and he became head of the office. This made an entire change in his work; instead of preparing despatches in one department, he had to superintend all the departments. The engrossment of his official time was consequently much greater; and he had often to cut short the visits of friends. In little more than a year after his promotion, in the end of 1857, the extinction of the company was resolved upon by the Government, and he had to aid the Court of Directors in their unavailing resistance to their doom. For this purpose he drafted the *Petition to Parliament* in behalf of the Company, in which he brought to bear all his resources in the theory and practice of politics. The Petition, as ultimately submitted, after some slight amendments by the Court of Directors, was pronounced by Earl Grey the ablest state-paper he had ever read. I do not mean to advert to its contents, further than to quote the two introductory sentences, the point and pungency of which the greatest orator might be proud of:—

"That your Petitioners, at their own expense, and by the agency of their own civil and military servants, originally acquired for this country its magnificent empire in the East.

"That the foundations of this empire were laid by your Petitioners, at that time neither aided nor controlled by Parliament, at the same period at which a succession of administrations under the control of Parliament were losing to the Crown

of Great Britain another great empire on the opposite side of the Atlantic."

Several other documents were prepared by Mill for the Court of Directors, while the abolition of the Company was under discussion in Parliament. It so happened that the Liberal Government, which first resolved on the measure, retired from office before it was carried, and the Government of Lord Derby had to finish it. Under the management of Lord Stanley, as President of the Board of Control, the new India Council was much more assimilated to the constitution of the old Court of Directors; and I am inclined to believe that the modification was in great measure owing to the force of Mill's reasonings.

The passing of the Bill led to his retirement from the India House. He told Grote that, but for the dissolution of the Company, he would have continued in the service till he was sixty. An attempt was made to secure him for the new Council. After the Chairman, he was the first applied to by Lord Stanley to take office as a Crown nominee. In declining, he gave, as his reason, failing health: but had he been stronger, he would have still preferred retirement to working under the new constitution.

His deliverance from official work in 1858 was followed by the crushing calamity of his wife's death. He was then on his way to spend the winter in Italy, but immediately after the event, he returned to his home at Blackheath. For some months, he saw nobody, but still corresponded actively on matters that interested him. His despondency was frightful. In reply to my condolence, he said "I have recovered the shock as much as I ever shall. Henceforth, I shall be only a conduit for ideas." Writing to Grote, he descended passionately on his wife's virtues: "If you had only known all that she was!"

In the beginning of 1859, I was preparing for publication my volume on *The Emotions and the Will*. I showed the MS. to Mill, and he revised it minutely, and jotted a great many suggestions. In two or three instances, his remarks bore the impress of his lacerated feelings.

He soon recommenced an active career of publication. The *Liberty* was already written, and, as he tells us, was never to be re-touched. His pamphlet on *Parliamentary Reform*, written some years previously, was revised and sent to press. On this he remarked in a letter:—"Grote, I am afraid, will not like it, on account of the ballot, if not other points. But I attach importance to it, as a sort of revision of the theory of representative government." A few days later, he wrote—"Grote knows that I now differ with him on the ballot, and we have discussed it together, with no effect on either".

Of course the pamphlet was well reasoned, but the case against the Ballot had not the strength that I should have expected. The main considerations put forward are these two—first, that the electoral vote is a trust, and therefore to be openly exercised; second, that, as a matter of fact, the coercion of the voter by bribery and intimidation has diminished and is diminishing. The argument from “a trust” was not new; it had been repeatedly answered by Grote and by others. The real point at issue was—whether the withdrawing the elector from the legitimate control of public opinion, be not a less evil than exposing him to illegitimate influence; and this depends on the state of the facts as to the diminution of such influence. Experience seems to be against Mill on this head: and it is unfortunate for his political sagacity and prescience, that the Legislature was converted to the ballot, after he had abandoned it.

The *Liberty* appeared about the same time. The work was conceived and planned in 1854. While thinking of it, he told Grote that he was cogitating an essay to point out what things society forbade that it ought not, and what things it left alone that it ought to control. Grote repeated this to me, remarking—“It is all very well for John Mill to stand up for the removal of social restraints, but as to imposing new ones, I feel the greatest apprehensions”. I instantly divined what the new restraints would be. The volume must have been the chief occupation of his spare time during the last two years of his official life. It is known that he set great store by the work; and thought it would probably last longer than any of his writings, except perhaps the *Logic*.

The old standing question of Freedom of Thought had been worked up, in a series of striking expositions, by his father, in conjunction with Bentham, and the circle of the *Westminster Review*; he himself, from his earliest youth, was embarked in the same cause, and his essays were inferior to none in the power and freshness of the handling. The first part of the *Liberty* is the condensation of all that had been previously done; and for the present, stands as the chief text-book of Freedom of Discussion. It works round a central thought, which has had a growing prominence in later years, the necessity of taking account of the *negative* to every positive affirmation; of laying down, side by side with every proposition, the *counter-proposition*. Following this cue, Mill’s first assumption is, that an opinion authoritatively suppressed may possibly be true; and the thirty pages devoted to this position show a combination of reasoning and eloquence that has never been surpassed, if equalled, in the cause of intellectual freedom. The second assumption is that an opinion is false. Here his argument takes

the more exclusive form of showing the necessity of keeping in the view the opposite of every opinion, in order to maintain the living force of the opinion itself. While there is much that is effective here also, I think that he puts too great stress upon the operation of negative criticism in keeping alive the understanding of a doctrine. It is perfectly true that when an opinion is actively opposed, its defenders are put on the *qui vive* in its defence; and have, in consequence, a far more lively sense of its truth, as well as a juster view of its meaning and import; but the necessity of keeping up imaginary opponents to every truth in science may easily be exaggerated. We need not conjure up opponents to gravitation so long as a hundred observations and a hundred thousand ships are constantly at work testing its consequences. This is the substitute that Mill desiderates (p. 80) for the disadvantage of the cessation of controversy in truths of great magnitude.

When he proceeds to illustrate the enlivening influence of negation by the case of ethical and religious doctrines, I think he fails to make out his case. It may be true enough that when a creed is first fighting for reception, it is at the height of its fervour, but the loss of power at a later stage is due to other causes than the absence of opponents. Mill's illustration from Christianity is hardly in point. Never since the suppression of pagan philosophy was Christianity more attacked than now; but we cannot say that the attacks have led, or are likely to lead, to a resuscitation of its spirit in the minds of Christians; the opposite would be nearer the truth.

The last branch of the argument for Free-Thought is constituted by Mill's favourite doctrine that conflicting doctrines usually share the truth between them. This view is, I think, both precarious in itself, and of very doubtful relevance to the author's main thesis. The example from the two state-parties—the party of order and the party of progress—will not stand a severe scrutiny. Not to mention, what he admits, that there is perfect freedom of discussion on the matter, the war of parties is, in point of fact, scarcely conducted according to his ideal. More to the point is the well-known passage on Christian Morality, which he regards as a series of half-truths, needing to be made up by truths derived from other sources. As far as his main purpose is concerned, I think all this belongs to the first branch of the argument and might have been included there; that first branch containing to my mind the real strength of the contention for Freedom of Thought.

The second half of the book is on Liberty of Conduct, as against the restraints of our social customs. This is introduced

by a chapter on Individuality, considered as one of the elements of well-being. Excellent as are many of the author's remarks, there are various openings for criticism. The chief thing that strikes me is the want of a steady view of the essentials of human happiness. I shall have to notice again the defects of Mill's Hedonic philosophy. I think that he greatly exaggerates the differences between human beings as regards the conditions of happiness. The community of structure in our corporeal and mental framework far exceeds the disparities; there are certain easily stated requisites, in the possession of which no one could be very unhappy; while the specialities needed to impart to a given individual the highest degree of felicity, are seldom withheld by the tyranny of custom, than by causes that society cannot control. Mill pleads strongly for the energetic natures, for the exuberance of spontaneity and strong impulses. But energy as such is not thwarted; and the difficulty will always remain, that superabundant energy is exceedingly apt to trench upon other people's rights. Mill too closely identifies energy with originality or genius, and genius with eccentricity. In regard to all these characteristics, many fine distinctions need to be drawn over and above what Mill gives us. When he talks of the present state of Englishmen as a state of collective greatness and diminishing individuality, it takes a little reflection to see what he is driving at. Nor is his reference of the unprogressiveness of the East to the despotism of custom a wholly satisfactory explanation; the problem of stationary societies is still undecided.

The chapter following, entitled "The Limits to the Authority of Society over the Individual," helps us better to his real meaning. He lays it down as an axiom that society should interfere only in what concerns itself. One might suppose that this would have passed as an axiom, instead of being cavilled at on all hands. Why should society, more than any other entity, interfere with what does not concern it? Even accepting the axiom, we may yet work it in society's favour by those numerous pretexts whereby individual action is alleged to have social bearings; but to refuse the axiom itself argues some defect of intelligent comprehension.

As a piece of vigorous composition, this chapter is not inferior to any in the book; it is admirable as an exposition in practical ethics, and might be enshrined as a standing homily in the moral instruction of mankind. It does what homilies rarely do, namely, endeavour to draw precise lines between social duty and individual liberty; and reviews the more notable instances where society still tyrannises over minorities. Still, the instances adduced seem scarcely to justify the denunciations of the author;

they are the remains of past ages of intolerance, and are gradually losing their hold.

It is in his subsequent chapter of "Applications," that we seem to approach his strongest case; but it is little more than hinted at; I mean the relationship of the sexes. It hardly admits of question that any great augmentation of human happiness that may be achieved in the future, must proceed first upon a better standard of worldly circumstances, and next upon the harmonising and adjusting of the social relations. After people are fed, clothed, and housed, at a reasonable expenditure of labour, their next thing is to seek scope for the affections; it is at this point that there occur the greatest successes and the greatest failures in happy living. The marriage relation is the most critical of any; and we have now a class of thinkers that maintain that this is enforced with too great stringency and monotony. To attain some additional latitude in this respect is an object that Mill, in common with his father, considered very desirable. Both were strongly averse to encouraging mere sensuality; but, though not prepared with any definite scheme of sexual reform, they urged that personal freedom should be extended, with a view to such social experiments as might lead to the better fulfilment of the great ideal that the sexual relation has in view.

The *Liberty* was exposed to a good deal of carping in consequence of Mill's admitting unequivocally that a certain amount of disapproval was proper and inevitable towards persons that behaved badly to themselves. It was said—What is this, after all, but a milder form of punishing them for what does not concern either us or society at large? He fully anticipated such a remark, and I think amply disposed of it, by drawing the very wide distinction between mere lowered estimation, and the treatment proper to offenders against society. He might have gone farther and drawn up a sliding scale or graduated table of modes of behaviour, from the most intense individual preference at the one end to the severest reprobation at the other. At least fifteen or twenty perceptible distinctions could be made; and a place found for every degree of merit and demerit. Because a person does not stand high in our esteem, it does not follow that we are punishing or persecuting him; the point when punishment in any proper sense could be said to begin would be about the middle of the scale. Mill remarks justly—"If any one displeases us, we may express our distaste and stand aloof from such an one; but we shall not therefore feel called on to make his life uncomfortable;" still less to send him to prison or to the stake.

Closely connected both in date of composition and in subject-

matter is the *Utilitarianism*. I find from a letter that it was written in 1854. It was thoroughly revised in 1860, and appeared as three papers in *Fraser's Magazine* in the beginning of 1861. I am not aware that any change was made in reprinting it as a volume, notwithstanding that it had a full share of hostile criticism as it came out in *Fraser*.

This short work has many volumes to answer for. The amount of attention it has received is due, in my opinion, partly to its merits, and partly to its defects. As a powerful advocacy of Utility, it threw the Intuitionists on the defensive; while, by a number of unguarded utterances, it gave them important strategic positions which they could not fail to occupy.

It is this last point that I shall now chiefly dwell upon. What I allude to more particularly is the theory of pleasure and pain embodied in the second chapter, or rather the string of casual expressions having reference to pleasures and pains. I have already said that I consider Mill's Hedonism weak. I do not find fault with him for not having elaborated a Hedonistic theory; that is a matter still ahead of us. My objection lies to certain loose expressions that have received an amount of notice from hostile critics out of all proportion to their bearing on his arguments for Utility. I think that, having opponents at every point, his proper course was not to commit himself to any more specific definition of Happiness than his case absolutely required.

It was obviously necessary that he should give some explanation of Happiness; and on his principles, happiness must be resolved into pleasure and the absence of pain. Here, however, he had to encounter at once the common dislike to regarding pleasure as the sole object of desire and pursuit; "a doctrine worthy only of swine," to which its holders have both in ancient and in modern times been most profusely likened. He courageously faces the difficulty by pronouncing in favour of a difference in *kind* or *quality* among pleasures; which difference he expands through two or three eloquent pages, which I believe have received more attention from critics on the other side than all the rest of the book put together. My own decided opinion is that he ought to have resolved all the so-called nobler or higher pleasures into the one single feature of including with the agent's pleasure the pleasure of others. This is the only position that a supporter of Utility can hold to. There is a superiority attaching to some pleasures that are still exclusively self-regarding, namely, their amount as compared with the exhaustion of the nervous power; the pleasures of music and of scenery are higher than those of stimulating drugs. But the superiority that makes a distinction of *quality*, that rises clearly

and effectually above the swinish level, is the superiority of the gratifications that take our fellow-beings along with us; such are the pleasures of affection, of benevolence, of duty. To have met opponents upon this ground alone would have been the proper undertaking for the object Mill had in view. It surprises me that he has not ventured upon such a mode of resolving pleasures. He says—"On a question which is the best worth having of two pleasures, or which of two modes of existence is the most grateful to the feelings, *apart from its moral attributes and consequences*, the judgment of those who are qualified by knowledge of both, must be admitted to be final." Apart from moral attributes and consequences, I do not see a difference of quality at all; and when these are taken into account, the difference is sufficient to call forth any amount of admiring preference. A man's actions are noble if they arrest misery or diffuse happiness around him; they are not noble if they are not directly or indirectly altruistic; his pleasures are essentially of the swinish type.

Still rasher, I think, is his off-hand formula of a happy life,¹ if he meant that this was to be a stone in the building of a Utilitarian philosophy. As a side-remark upon some of the important conditions of happiness, it is interesting enough, but far from being rounded or precise. It was only to be expected that this utterance should have the same fate as Paley's chapter on Happiness, namely, to be analysed to death, and have its mangled remains exposed as a memento of the weakness of the philosophy that it is intended to support. It was clearly his business in conducting a defence of Utility, to avoid all questionable suppositions, and to be content with what everybody would allow on the matter of happiness.

His third chapter, treating of the Ultimate Sanction of the Principle of Utility, has been much cavilled at in detail, but is, I consider, a very admirable statement of the genesis of moral sentiment under all the various influences that are necessarily at work. Here occurs that fine passage on the Social feelings of mankind, which ought, I think, to have been the framework or setting of the whole chapter. Perhaps he should have avoided the word "sanction," so rigidly confined by Austin and the jurists to the penalty or punishment of wrong.

The real stress of the book lies in the last chapter, which is well reasoned in every way, and free from damaging admissions.

¹ Happiness was "not a life of rapture; but moments of such, in an existence made up of few and transitory pains, many and various pleasures, with a decided predominance of the active over the passive, and having as the foundation of the whole, not to expect more from life than it is capable of bestowing".

Under the guise of an inquiry into the foundations of Justice, he raises the question as to the source of duty or obligation, and meets the intuitionists point by point in a way that I need not particularise.

By far the best hostile criticism of the *Utilitarianism* that I am acquainted with, is the posthumous volume of Prof. John Grote. It will there be seen what havoc an acute, yet candid and respectful, opponent can make of his theories of happiness. Many of those strictures I consider unanswerable. Prof. Grote also makes the most of Mill's somewhat exaggerated moral strain, and his affectation of holding happiness in contempt ; "doing without it," if need be.

It was in 1860 that he wrote his volume on *Representative Government*. The state of the Reform question, which led him to prepare his pamphlet on Reform, was the motive of the still larger undertaking, his principal contribution to a Philosophy of Politics. He says in the Preface, that the chief novelty of the volume is the bringing together, in a connected form, the various political doctrines that he had at various times given expression to ; but the mere fact of viewing them in connexion necessarily improved their statement and bearings ; and the six or eight months' additional elaboration in his fertile brain could not but infuse additional freshness into the subject.

In my estimate of Mill's genius, he was first of all a Logician, and next a social philosopher or Politician. The *Political Economy* and the *Representative Government* constitute his political outcome. People will differ as to his political conclusions, but certainly any man that wishes to judge of any matter within the scope of the *Representative Government* should first see what is there said upon it ; and the work must long enter into the education of the higher class of politicians. The chapter on the "Criterion of a good form of Government" contains an exceedingly pertinent discussion of the relation between Order and Progress ; and demonstrates that Order cannot be permanent without Progress : a position in advance of Comte. The third chapter demolishes the fond theory entertained by many in the present day that the best government is "Absolute authority in good hands". Then comes a question that needs all the author's delicacy, tact, and resource,—Under what conditions is representative government applicable ? But his strongest point throughout is the exposition of the dangers and difficulties attending on Democracy. This was one of his oldest themes in the *Westminster Review* ; he has put it in every possible light, and discussed with apostolic ardour all the contrivances for withstanding the tyranny of the majority. He took up

with avidity Mr. Hare's scheme of Representation, and never ceased to urge it as the greatest known improvement that representative institutions are susceptible of. He dismisses Second Chambers as wholly inadequate to the purpose in view, however useful otherwise. The discussions on the proper functions of the Local Governing Bodies, on Dependencies, and on Federations are all brimful of good political thinking. He passes by the subject of Hereditary Monarchy. Both he and Grote were republicans in principle, but they regarded the monarchy as preferable to the exposing of the highest dignity of the state to competition. From my latest conversations with Mill, I think he coincided in the view that simple Cabinet Government would be the natural substitute for Monarchy.

In 1861 he began to turn his thoughts to a review of Hamilton's Philosophy. Writing to me in November, he says, "I mean to take up Sir William Hamilton, and try if I can make an article on him for the *Westminster*". He chose the *Westminster* when he wanted free room for his elbow. He soon abandoned the idea of an article. In December he said :—"I have now studied all Sir W. Hamilton's works pretty thoroughly, and see my way to most of what I have got to say respecting him. But I have given up the idea of doing it in anything less than a volume. The great recommendation of this project is, that it will enable me to supply what was prudently left deficient in the *Logic*, and to do the kind of service which I am capable of to rational psychology, namely, to its *Polemik*."

He was interrupted for a time by the events in America. In January, 1862, he wrote his paper on the Civil War in *Fraser*. He expected it to give great offence, and to be the most hazardous thing for his influence that he had yet done.

After spending the summer in a tour in Greece and Asia Minor, he wrote again on the American Question, in a review of Cairnes's book in the *Westminster*. This done, he set to the *Hamilton*, which was the chief part of his occupation for the next two years. His interruptions were the article on John Austin in the *Edinburgh*, in Oct., 1863, the two articles on Comte in the end of 1864, and the revision of the *Political Economy*.

I had a great deal of correspondence with him while he was engaged with Hamilton. He read all Hamilton's writings three times over, and all the books that he thought in any way related to the subjects treated of. Among other things, he wrote me a long criticism of *Ferrier's Institutes*. "I thought Ferrier's book quite *sui generis* when I first read it, and I think so more than ever after reading it again. His system is one of pure

scepticism, very skilfully clothed in dogmatic language." He was much exercised upon the whole subject of Indestructibility of Force. His reading of Spencer, Tyndall and others landed him in a host of difficulties, which I did what I could to clear up. His picture of Hamilton grew darker as he went on; chiefly from the increasing sense of his inconsistencies. He often wished that he was alive to answer for himself. "I was not prepared for the degree in which this complete acquaintance lowers my estimate of the man and of his speculations. I did not expect to find them a mass of contradictions. There is scarcely a point of importance on which he does not hold conflicting theories, or profess doctrines which suppose one theory while he himself holds another. It almost goes against me to write so complete a demolition of a brother philosopher after he is dead, not having done it while he was alive."

During my stay in London in the summer of 1864, he showed me the finished MS. of a large part of the book. I offered a variety of minor suggestions, and he completed the work for the press the same autumn.

Of the many topics comprised in the volume, I shall advert only to one or two of the principal. After following Hamilton's theories through ten chapters, he advances his own positive view of the Belief in an External World. Having myself gone over the same ground, I wish to remark on what is peculiar in his treatment of the question.

I give him full credit for his uncompromising Idealism, and for his varied and forcible exposition of it. In this respect he has contributed to educate the thinking public in what I regard as the truth. But in looking at his analysis in detail, while I admit he has seized the more important things, I do not exactly agree with him either as to the order of statement, or as to the relative stress put upon the various elements of the Object and Subject distinction.

In the first place, I would remark on the omission of the quality of *Resistance*, and of the muscular energies as a whole, from his delineation of the object or external world. In this particular, usage and authority are against him to begin with. The connexion of an External World with the Primary Qualities has been so long prevalent, that there must be some reason or plausibility in it. His own father and Mansel are equally emphatic in setting forth Resistance as the primary fact of Externality. Mill himself, however, allows no place for Resistance in his psychological theory. In a separate chapter on the Primary Qualities of Matter, he deals with Extension and Resistance, as products of muscular sensibility, and as giving us our notions of *Matter*, but he thinks that simple tactile sensi-

bility mingles with resistance, and plays as great a part as the purely muscular ingredient; thus frittering away the supposed antithesis of muscular energy and passive sensibility. Now, for my own part, I incline to the usage and opinion of our predecessors in putting forward the contrast of active energy and passive feeling as an important constituent of the subject and object distinction; and, if it is to be admitted at all, I am disposed to begin with it, instead of putting it last as Mr. Spencer does, or leaving it out as Mill does. It does not give all that is implied in Matter, but it gives the nucleus of the composite feeling, as well as the fundamental and defining attribute.

The stress of Mill's exposition rests on the *fixity of order* in our sensations, leading to a constancy of recurrence, and a belief in that constancy, going the length of assuming independent existence. Although he shows a perfect mastery of his position, I do not consider that he has done entire justice to it, from not carrying along with him the contrast of the objective and the subjective—the Sensation and the Idea. Indeed, the exposition is too short for the theme; the reader is apt to be satisfied with the portable phrase—"permanent possibility of sensation," which helps him to one vital part of the case, but does not amount to a satisfactory equivalent for an External and Independent World. There would have been more help in an expression dwelling upon the "common to all," in contrast with the "special to me," to use one of Ferrier's forms of phraseology. This ground of distinction is not left unnoticed by Mill, but it is simply mentioned.

His chapter on the application to our belief in the permanent existence of Mind is, I think, even more subtle than the preceding on Matter. The manner of disposing of Reid's difficulty about the existence of his fellow-creatures is everything that I could wish. It is when, in the concluding paragraph, he lays down as final and inexplicable the Belief in Memory, that I am unable to agree with him. This position of his has been much dwelt upon by the thinkers opposed to him. It makes him appear, after all, to be a transcendentalist like themselves, differing only in degree. For myself, I never could see where his difficulty lay, or what moved him to say that the belief in memory is incomprehensible or essentially irresolvable. The precise nature of Belief is no doubt invested with very peculiar delicacy, but whenever it shall be cleared up, it may very fairly be capable of accounting for the belief that a certain state now past as a sensation, but present as an idea, was once a sensation, and is not a mere product of thought or imagination. (*Cf. The Emotions and the Will*, 3d. edit., p. 532.)

I may make a passing observation on the chapter specially devoted to Mansel's *Limits of Religious Thought*. It is a considerable digression in a work devoted to Hamilton, but Mansel's book touched Mill to the quick ; in private, he called it a "loathsome" book. His combined argumentative and passionate style rises to its utmost height. Mansel sarcastically described his famous climax—"to hell I will go"—as an exhibition of taste and temper. That passage was scarcely what Grote called it, a Promethean defiance of Jove, inasmuch as the fear of hell never had a place in Mill's bosom ; it sprang from the strength of his feelings coining the strongest attainable image to give them vent.¹

Mill could not help adverting to Hamilton's very strong and paradoxical assertions about Free-Will ; but as he never elaborates a consecutive exposition of the question, I doubt the propriety of making these assertions a text for discussing it at full. Mill's chapter is either too much or too little ; too much as regards his author, too little as regards the subject. The connexion of Punishment with Free-Will should be allowed only under protest ; the legitimacy and the limits of punishment make a distinct inquiry. Punishment, psychologically viewed, assumes that men recoil from pain ; there may be other springs of action besides pain or pleasure ; but as regards such, both reward and punishment are irrelevant. I think Mill very successful in illustrating the independence of moral good and evil on the question of the Will. He is not too strong in his remonstrance against Hamilton's attempt to frighten people into Free-Will by declaring that the existence of the Creator hangs upon it. It was quite in Hamilton's way to destroy all the other arguments in favour of a doctrine that he espoused, in order to give freer course to his own. He damages the advocacy of Free-Will by his slashing antinomy of the two contrary doctrines. It is certainly a clearing of the ground, if nothing more, to affirm, as he does so strongly, that "a determination by motives cannot escape from necessitation". Such admissions give an opponent some advantage, but only as respects him individually. The general controversy, however, must proceed on different lines from his, and hence the waste of strength in following his lead.

Hamilton's attack on the study of Mathematics was a battery of learned quotations brought out to confound Whewell and Cambridge. It is not very convincing ; it hardly even does what Mill thinks toleration of hostile criticism tends to do,

¹ Grote thought that the phrase was an echo of something occurring in Ben Jonson ; where a military captain's implicit obedience is crowned by the illustration—"Tell him to go to hell, to hell he will go."

namely, bring out the half-truth neglected by the other side. It was not worth while to write so long a chapter in reply; but Mill, partly from what he learnt from Comte, and partly from his own logical studies, had a pat answer to every one of Hamilton's points. Most notable, in my view, is the paragraph about the disastrous influence of the mathematical method of Descartes in all subsequent speculation. He seems there to say that the *a priori* spirit has been chiefly kept up by the example of Mathematics. Now, I freely admit that the axioms of mathematics have been the favourite illustration of Intuition; but there is no certainty that, in the absence of that example, Intuitionism would not have had its full swing during the last two centuries. Mill admits that the crudity of Bacon's Inductive canons had an equally bad effect on English speculation; but all this shows simply that error is the parent of error.

The two subjects taken up while the *Hamilton* was still in hand—John Austin and Comte—deserve to be ranked among the best of his minor compositions. The “Austin” article took him back to his early days when he worked with Bentham and attended the lectures of Austin at University College. It does not seem to contain much originality, but it is a logical treat. The two “Comte” articles are still more valuable, as being Mill's contribution to the elucidation of Comte's Philosophy. It will be long ere an equally searching and dispassionate estimate of Comte be given to the world; indeed, no one can again combine the same qualifications for the work.

The publication of the *Hamilton* in the spring of 1865 was followed by a crowd of events. He had already embarked on an article on Grote's *Plato*, which had lately appeared. He had arranged with his publisher for cheap reprints of the *Political Economy*, the *Liberty*, and the *Representative Government*. Then came the requisition to stand for Westminster, by which his name blazed into a sudden notoriety, under which the cheap volumes went off like wildfire, while there was an increased demand for the *Logic*. His letter, announcing his compliance with the requisition on certain conditions, was a surprise. It was scarcely to be expected that he could feel himself “honoured” by being elected to Parliament, in the maturity of his great reputation. Perhaps we must go farther back to account for his ready compliance. He had felt it acutely as a disadvantage of his being placed in the India House that he could not enter Parliament; and again, in the days when he was heading the philosophic radicals, he was conscious of the weakness of his position in not being himself in the House of Commons. He had not yet ceased to be a practical politician, although he had

become many things besides ; and the long slumbering idea of being in Parliament was suddenly wakened into life. His anticipation of success in the election was not sanguine ; but his supporters were enthusiastic, and his appearances at the meetings of the electors procured daily accessions to his cause. Above all things, the attempts to entrap him by cunningly devised questions most signally recoiled upon the authors.

Half of his year for the next three years was given up to attendance in the House and engrossment with public questions. I am not about to criticise his career as a member of Parliament. The part of the *Autobiography* where he is perhaps most self-complacent, is what relates to his speeches and doings in those years. He set a good example of perfect party loyalty, combined with the assertion of difference of opinion on particular questions. For a number of years his relations with Mr. Gladstone had been far more cordial and intimate than the outer world was aware of. His idea of ventilating questions that had as yet scarcely any supporters appeared to me to be carried to an extreme. He was not an orator physically ; but he composed and delivered speeches possessing all the qualities of his published writings, that is to say, original in thought, powerfully reasoned, and full of passionate fire when the occasion demanded.

In the six months' recess he carried on his philosophical and other writings. In the autumn and winter of 1865 he had to finish his long article on *Plato*, on which he bestowed great pains, having taken the trouble to re-read the whole of *Plato* in the original. To the reader of Grote, the article does not impart much that is absolutely new ; but *Plato* being an early subject of his as well as of his father's, his handling has freshness and gusto.

The extraordinary stimulus given to the sale of his books prematurely exhausted the current edition of the *Logic* ; and it had been his intention to revise it for the next edition (the Sixth). This had to be seen to, along with the " *Plato*," during the same recess. His revision, on this occasion, partly consisted in improving the " *Induction* " by new examples. I referred him to Brown Séquard's interesting research on Cadaveric Rigidity, and induced him to read the same author's volume of Researches on the Nervous System. I also obtained from Thomas Graham a complete set of his researches on Gases and Liquids : pointing his attention to what I thought most available. It was in this edition that he first combated Mr. Spencer's doctrine of " Inconceivability of the opposite " as a test of truth.

The same winter recess was not allowed to conclude without another distraction. The students of St. Andrews had, without

asking his leave, elected him Lord Rector. On its being announced to him, he wished to decline. This, however, was not easy after the thing was done; and he accepted on the understanding that he was not to deliver the Rectorial Address till next year.

Meantime, his letters to me were full of the notices that had come out on the *Hamilton*. When the session of 1866 was concluded, after a tour in the Alps and Pyrenees, he settled down at Avignon to write his Address for St. Andrews, and to answer the attacks on *Hamilton* for the third edition; both which feats he accomplished before the opening of the session of 1867.

The St. Andrews Address was a very lengthened performance; its delivery lasted three hours. It aimed at a complete survey of the Higher Education. Its absolute value is considerable; but in relation to the time, place, and circumstances, I consider it to have been a mistake. Mill had taken it into his head that the Greek and Roman classics had been too hardly pressed by the votaries of science, and were in some danger of being excluded from the higher teaching; and he occupies nearly half of the address in vindicating their importance. The second half is a vigorous enforcement of the claims of Science.

The performance was a failure, in my opinion, for this simple reason, that he had no conception of the limits of a University curriculum. The Scotch Universities have been distinguished for the amount of study comprised in their Arts Degree. Mill would have them keep up the Classics intact, and even raise their standard; he would also include a complete course of the Primary Sciences—Mathematics, Physics, Chemistry, Physiology, Logic, and Psychology, to which he would add Political Economy, Jurisprudence, and International Law. Now at present the obligatory sciences are Mathematics, Natural Philosophy, Logic, and Moral Philosophy. If he had consulted me on this occasion, I should have endeavoured to impress upon him the limits of our possible curriculum, and should have asked him to arbitrate between the claims of Literature and Science, so as to make the very most of our time and means. He would then have had to balance Latin and Greek against Chemistry, Physiology, and Jurisprudence; for it is quite certain that both these languages would have to be dropped absolutely, to admit his extended science course. In that case he would have been more careful in his statements as to the Greek and Latin languages. He would not have put these languages as synonymous with "literature"; and he would have made much more allowance for translations and expositions through the modern languages. He would have found that at the present day we

have other methods of correcting the tendency to mistake words for things than learning any two or three additional languages. He would not have assumed that our pupils are made all "to think in Greek"; nor would he have considered it impossible to get at the sources of Greek and Roman History without studying the languages. If he had had a real opponent, he would not have given the authority of his name to the assertion that Grammar is "elementary Logic". His mode of speaking of the style of the ancient writers, to my mind at least, is greatly exaggerated. "Look at an oration of Demosthenes; there is nothing in it which calls attention to itself as style at all". "The Athenians do not cry out—What a splendid speaker, but—Let us march against Philip." He also gives way to the common remark that the teaching of Latin and Greek could be so much improved as to make it an inconsiderable draft upon a pupil's energies. On this point he had no experience to go upon but his own, and that did not support his position.

In the scientific departments he carries out strictly the Comtean hierarchy of the fundamental sciences, and in this respect the address was valuable as against the mischievous practice of culling out a science from the middle of the series, say Chemistry, and prescribing it by itself to the exclusion of its forerunners in the hierarchy. While he speaks fairly and well on the Mathematical and Physical Sciences, his remarks on the Moral and Political display as usual the master's hand. From these he was led to talk of Free Thought, on which he maintained a somewhat impracticable ideal for our Universities. From Science he proceeded to Art, and enforced a favourite theme—the subservience of Poetry to Virtue and Morality. One feels that on this topic a little more discrimination was necessary; art being a very wide word. His conclusion was a *double entendre*. "I do not attempt to instigate you by the prospect of direct rewards, either earthly or heavenly; the less we think about being rewarded in either way, the better for us."

In the reception given to the Address he was most struck with the vociferous applause of the Divinity students at the Free-thought passage. He was privately thanked by others among the hearers for this part.

The Third Edition of the *Hamilton* contained replies to the host of critics that had assailed it. The additional scope given to the author's polemical force greatly enhanced the interest of the book. In answering the attacks made on his criticism of Hamilton's doctrines on the Relativity of Knowledge and Philosophy of the Conditioned, as well as in the reply to Mansel on

Religion, he showed to considerable advantage. In defending the Psychological Theory of the Belief in an External World, he grappled with the stock arguments against Idealism. He made least way in the Free-Will controversy; affording, as I think, a confirmation of the impolicy of carrying on so many extraneous questions together.

His next literary project was the editing his father's *Analysis*. This was commenced in the recess of 1867, and finished in the following year, being brought out early in 1869. I had necessarily a long correspondence with him on the allocation of topics; but each of us took his own line in regard to the doctrines. Coincidence of view was the rule; the discrepancy seldom went beyond the mode of statement, the chief exception being the topic of Belief. The work contains perhaps the best summary of his psychological opinions, although the *Hamilton* shows them in the more stirring shape of polemics.

Before this work came out his Parliamentary career was at an end. The circumstances that led to his defeat in the election of 1868 are detailed by himself. They included the singular indiscretion of his allowing his subscription to Mr Bradlaugh to be made public before his own election day; very unlike his usual circumspectness. His apology is somewhat lame; and does not take account of the fact that he was contesting the seat in the interest of other people and at their expense. So energetically did the opposition ply the weapon thus put into their hands that they may have owed their success to it alone. Although on public grounds he regretted being no longer in Parliament, he was not sorry to resume his quiet and his leisure for other work.

The pamphlet entitled *England and Ireland*, brought out in the beginning of 1868, declared, as he says, his whole mind on the subject of Ireland, chiefly as regarded the land, and is couched in very strong language indeed. He believed that this pamphlet helped to determine Mr. Gladstone to commence his Irish Legislation with the Church, leaving the Land to a later operation.

The year 1869, his first year of release, saw the publication of his last book—*The Subjection of Women*, together with the two first articles in his fourth volume of *Dissertations*—“Endowments,” and “Labour and its claims,” a review of Mr. Thornton’s work on that subject.

The volume on the *Subjection of Women* he tells us was first written in 1861. It was, he says, a joint production; portions were written by Miss Taylor, while his share was the result of

innumerable conversations and discussions with his wife. However the merits be partitioned, it is a book of a very marked character. It is the most sustained exposition of Mill's life-long theme—the abuses of power. The extent of the illustration and the emphasis of the language render it the best extant homily on the evils of subjection in general; while the same arts are maintained in dealing with the application to the disabilities of women. This case, which of all others most engaged his feelings, is, I think, the one instance where he may be charged with overstraining. In discussing political freedom at large, he is always sufficiently alive to the necessities of government; in the present question, he leaves us to suppose that the relations of men and women between themselves may work upon a purely voluntary principle. He abstains here and elsewhere from advocating divorce pure and simple, because of the complications attending the question; while he does not show what is the remedy when a man and a woman united by the marriage bond are unable to co-operate as equal partners.

His handling of the mental equality of the sexes is, to my mind, open to exception. In the intensity of his special pleading on this question he hardly avoids contradicting himself, while he postulates a degree of equality that does not fall in with the experience of the least biased observers. He grants that women are physically inferior, but seems to think that this does not affect their mental powers. He never takes account of the fact that the large diversion of force for the procreative function must give some general inferiority in all things where that does not come in, unless women are made on the whole much stronger than men. In an allusion to his experience of the government of India, he tells us that, in three cases out of four, if a superior instance of good government occurs, it is in a woman's reign; which looks like the fallacy of proving too much.

Without entering into an argument with him on his equality view, I expressed my doubts as to the expediency of putting this more strongly than people generally would be willing to accept it; inasmuch as the equality of rights did not presuppose absolute equality of faculties. He replied with much warmth, contending that the day of temporising policy was past; that it was necessary to show not simply that the removal of restrictions would leave things as they are, but that many women are really capable of taking advantage of the higher openings. And further, he urged, it was necessary to stimulate the aspirations of women themselves, so as to obtain proofs from experience as to what they could do.

A considerable portion of his labours during the last three years of his life was given to the Land Question, which he greatly

helped to mature for future settlement. Under this movement he renewed his old fight for peasant properties, and started the new heresy of the unearned increment. It was his pride to co-operate in all these questions with the working classes and their leaders, and had he lived, he would have been of unspeakable value as a mediator in the struggles between labour and capital, and between the working population generally and the heads of political parties. He would not, however, I think, ever have been a working-men's champion on their own lines. He would not have held out any tempting bribe of immediate amelioration such as to inspire the highest efforts of the existing generation. His greatest hopes were of a very slow progress in all things; with the sole exception, perhaps, of the equality-of-women question, on which his feelings went farther than on any other.

The posthumous *Essays on Religion* do not correspond with what we should have expected from him on that subject. Never, so far as I know, did he give any hint of wishing or attempting to re-construct a system of Theism on a scientific basis. In one sentence in the *Hamilton* he spoke approvingly of the argument from Design, but laid more stress on its persuasiveness than on its soundness. The *Autobiography* represented his attitude towards Religion as pure negation, or nescience, just as his father's had been.

The Essay on *Nature* paints the world black enough, and from that he was not likely to rise to a flattering estimate of Nature's God. I think he should have widened his survey considerably before pronouncing as he does. For although there are good grounds for many of his statements of fact, the case is by no means complete. By his own showing in other places, many happy lives have been passed in the world as we find it, and he looked forward to a time when happiness might be the rule instead of the exception. I should have expected him to push the analysis of the causes of evil a step further, namely, first, to the inadequacy of man's intellectual force to cope with the obscurities of nature, and next to the want of ability to counteract known causes of mischief. A remark that he once made regarding his own temperament, is a part of the case in considering nature; he said, in answer to some gloomy utterance of Grote's, that with himself the difficulty was not so much to realise pleasure as to keep off pain; and it is the fact that there are many pleasurable resources in the world if we could only submerge the attendant miseries. His exposure of the insufficiency of Nature as a *guide* is pure logic, and in that he was not likely to be wanting.

The Essay on the *Utility of Religion* is a farther illustration of his old theme (in the *Utilitarianism*) as to the sufficiency of the sanctions and motives of the present life for sustaining not only the inferior moral virtues, but also the elevated sentiments of mankind. He here puts forward a sort of Religion of Humanity, constructed on the basis of men's amiable feelings towards one another. To this he had been led, I have no doubt, in the first instance, by Comte, although the filling-up is his own.

But by far the most laboured of the Essays is the last—uniting a destructive and a constructive *Theism*. The destructive part is in accordance with all his antecedents; it is the constructive part that we were not prepared for. It was indeed quite compatible with his warm human sympathies, and with his long-standing doctrine that every creed is likely to contain some portion of truth, that he should try and ascertain what there was in religion to commend it to the best minds among its adherents; our doubt would have been whether, after painting the world in such gloomy hues, he could set up a Deity that would replace, in the hearts of men, the one that he undertook to destroy. Religion, we know, is exceedingly variable, but there are some things in it not easy to dispense with. Until the advent of the modern sentimental Theism, it has usually contained the idea of authority and subjection; the prescription of duties with rewards and punishments attached to them. Men's deities in all early ages had to be propitiated as powers capable of evil at least, if not also of good. In pure Monotheism, the unbounded beneficence of the Deity has been an indispensable attribute, in spite of the difficulties attending it. Plato insisted that this belief should be supported by state penalties; and we know how essential it is regarded in the present day by the Theists that do not accept revelation. All these points of support Mill dispensed with; while working upon the idea, so repugnant to the religious worshipper, of putting a logical limitation and restriction on the great object of worship. A Being that would not interfere to do us either harm or good can scarcely excite in us any strong regards; at least until we have undergone a new education. The supposed limitations of his power, besides being strangely at variance with the undeniable vastness and complex adjustment of the world, would seem fatal to his ascendancy in our minds.

The speculation is equally precarious as regards a future life. Mill hardly does justice to the natural difficulties of reproducing human existence, after death, for an eternal duration; and yet casts doubts on the omnipotence of the Power that is to perform the miracle.

A. BAIN.

VI.—NOTES AND DISCUSSIONS.

DR. HUGHLINGS JACKSON ON MORBID AFFECTIONS OF SPEECH.

Dr. J. Hughlings Jackson, one of the Editors of *Brain*, has contributed to some recent numbers of that journal three important articles "On Affections of Speech from Disease of the Brain". His aim being always to illustrate abnormal conditions by a clear conception of the normal conditions of mental life, he is able by his familiarity with the best results of modern psychological analysis to exemplify in a singularly full and complete manner the close correlation between the two. This is seen, for example, in the prominence which he gives to the idea of cerebral disease as a process of Dissolution, the reverse of the process of Evolution as defined by Mr. Herbert Spencer. But the exigencies of pathological interpretation have also compelled him to go beyond accepted truths in psychology, and his papers contain some very suggestive ideas as to the nature of the normal mental processes.

In the first article (*Brain*, III.) he begins by remarking on the manifold character of Affections of Speech. Thus it is not enough to study speech "morphologically," that is, in reference to the geographical position of the centres concerned; it must be studied "anatomically," that is, in relation to the anatomical connexions between the centres and the parts of the body represented there. And so we must say that the substratum of words "is made up of nerve-cells and fibres representing some particular articulatory movement". Again, the method must not be partly anatomical and physiological, partly psychological, but the phenomenon must be consistently viewed on both the objective and the subjective side. Once more, these special cases of nervous disorder cannot be dealt with methodically apart from other kinds of nervous disease. Loss of speech must be studied in the light of the facts of loss of images or "imperception" (in delirium). Aphasia has also its analogue in hemiplegia, since in both we can trace degrees of dissolution, that is of reduction of actions from the least to the most highly organised. As our subject has to be studied empirically at first, we must adopt rough classifications. First of all loss of *speech*, due to extensive disease of the brain, must be distinguished from loss of *articulation*, due to complete paralysis of the tongue, &c., and from loss of *vocalisation*, due to disease of the larynx. Again we must draw a distinction between Intellectual and Emotional Language, and say that while the speechless patient has lost the former he has not lost the latter. That is to say, the patient may be able to use words (e.g., "yes" and "no") interjectionally, but not propositionally. The affections of speech are very different in degree and kind according to the exact seat and extent of the disease. We may roughly mark off three degrees; (1) *Defect of Speech*, in which the patient has a full vocabulary, but confuses words; (2) *Loss of Speech*, in which the patient is practically speechless and his panto-

mimic is impaired ; and (3) *Loss of Language*, in which, besides being speechless, he has altogether lost pantomimic, and emotional language is deeply involved.

We begin with (2), "complete aphasia," as the simplest. In noting this condition we must (as in the case of all nervous disorders) carefully observe both the patient's negative and positive condition—that is, what he has lost in language as well as what he retains. First of all, then, his negative condition is summed up by saying : (a)—He does not speak, that is, utter anything of real speech value. (b) He cannot write. This last defect shows he cannot speak internally (a fainter degree of external utterance). (c) He cannot read to himself (in most cases). (d) Lastly, his power of making signs ("pantomimic propositionising") is impaired. His positive condition is described as follows:—(a) He can understand what is said or read to him, showing that though "speechless" he is not "wordless". (b) His articulatory organs move well in eating, &c. (c) His vocal organs, too, act apparently well (he may be able to sing). (d) His emotional language is apparently unaffected. Thus he smiles, frowns, and varies his voice properly. This condition is only to be understood by a reference to the fact that the patient possesses the images symbolised by words. The patient's perception and recognition of things is unaffected. Thus he will point to familiar objects which are named in his hearing : he recognises drawings, and even handwriting, though he cannot read what is written. So, again, he can copy writing, and copy print into writing, though unable to write in the sense of expressing himself. This shows that he has not lost images, and has not wholly lost words, though he has lost "the words used in speech". That is to say, he retains an "automatic service of words". Besides the comparatively unimportant distinction between internal and external speech (which is one of degree only), there is a very important distinction between "the prior, unconscious, subconscious, or automatic reproduction of words, and the sequent, conscious, and voluntary reproduction of words : the latter alone is speech either internal or external". This duality in the verbalising process corresponds to a duality in the revival of the images symbolised. Thus, when a man in delirium takes his nurse to be his wife, it is because in his sane state the first stage of his recognition of her as a woman would be the subconscious automatic reproduction of his, or one of his, well-organised symbol-images of woman, of which the one most organised would probably be that of his wife. There is evidence for saying generally that it is the right half of the brain which acts when the first subconscious service of words begins, the left when there follows that verbal action which is speech. The activity of the right half is also supposed to be that which underlies the understanding of another's words. The writer concludes this article by commenting on "emotional aphasia," which he regards as no real loss of speech at all.

In the second article (*Brain*, VI.) Dr. H. Jackson goes more into the details of the positive side of the case called by him *Loss of*

Speech. He admits that there is something like speech left, but contends that this is of the very lowest, most completely organised kind. The utterances made by the patient are either (1) *Recurring Utterances*, or (2) *Occasional Utterances*.

(1) *Recurring Utterances* consist (a) sometimes of jargon as "yabby," "watty" &c.; (b) in other cases they are made up of words which to a healthy person are speech, as "man," "awful"; but since they come out at all times, they mean no more than the jargon. Their only function is that of emotional expression. In truth, the patient sings his recurring utterances. (c) Sometimes, again, the recurring utterance is a phrase as "come on," which, though it has a propositional structure, has no propositional function in the mouth of a speechless patient. (d) A common relic of speech with the speechless patient is a recurring "yes" or "no," or both these words. Sometimes this is all that is left; at other times it is found along with utterances taken from the other divisions. The peculiarity of "yes" and "no" is that while they may be propositions (being "proposition-words"), they are not always this. Thus some patients may simply use "yes" and "no" interjectionally as an expression of feeling without meaning assent or dissent. Others again may reply by help of these "proposition-words," showing that they are not absolutely speechless. And, finally, in many cases, besides having the emotional service of these words, and being able to reply with them, the patient can say "yes" or "no" when told to do so, thus showing that he has the full use of them. The presence of this additional power of reproducing the words "yes" and "no" when told, marks an important distinction in speech-affections. To sum up the result of the inquiry into Recurring Utterances, the only real exception to the rule that the speechless patient has absolutely lost speech, is the case in which "yes" and "no" are used in reply (propositionally); and this exception is very significant, since these words are "the two most general, most automatic of all his propositions". "Yes" and "no" really stand on the border-line between emotional and intellectual language, being used by healthy people now in the one way now in the other. (Thus "yes" may simply express a feeling of sympathy as well as imply assent to a proposition, and "no" may indicate mere surprise.) Hence the retention of these two most perfectly organised of all propositions is strictly in accordance with the principle of Dissolution.

(2) *Occasional Utterances* are rare, with the exception of oaths, which are much more frequent. They may be classed serially as (a) Utterances which are not speech; (b) Utterances which are inferior speech; and (c) Utterances which are real speech. Under (a) fall "bad language" ejaculations as "Bless my life," which are brought out under some strong excitement and cannot be repeated. They are among the best organised emotional ejaculations. Class (b) includes such utterances as "Wo, wo!" once brought out by a patient when standing by a horse. They are true speech, but inferior speech ("superior" and "inferior" as applied to speech referring to the

degree of precision of application to new relations of things). That is to say, they are well-organised utterances prompted by special but often-recurring circumstances, and admitting of no variation in correspondence with new situations. Group (c) comprises very rare utterances which are perfect speech, being adaptations of words to special and new circumstances. Thus one of Dr. Jackson's own patients said in reply to an inquiry by his son as to where the former's tools were, "Master's," which involved adaptation to new circumstances. Such a case presents great difficulties. It is impossible to say whether the reproduction of this proposition was owing to the frequency of its repetition before the disease came on, or to the strong emotional interest excited by the question. (The man was very poor, and his tools a matter of real importance to him.) Neglecting these very rare utterances, we see that a speechless patient may possess some "rags and tatters" of real speech, which represent the best-organised part of his language. It is probable that this residual highly organised utterance takes place by help of the right half of the brain, that part which appears to serve in the first automatic reproduction of words. It is to be supposed that while every process of verbalising, like every other process, is dual, the more automatic the process is the more fully and equally is it represented in each half of the brain.

It still remains, however, to account for the use of those Recurring Utterances which do not at first appear to be the result of such highly organised nervous arrangements. In the third article (*Brain*, VII.) Dr. H. Jackson takes up these cases, giving fuller examples of Recurring Utterances. When the recurring phrases, which, as observed, are always used emotionally, are not common exclamations, like oaths, we may account for their recurrence by the hypothesis that "*they were being said, or about to be said, when the patient was taken ill.*" To make this intelligible it is needful to enlarge more fully on the distinction already pointed out between the two services of words, Subconscious or Automatic and Conscious, connected with the two sides of the brain. Speech is to be regarded as but the second half of a whole process which may be called *verbalising*. We can say that it includes two propositions, a "subject-proposition," followed by an "object-proposition". "It is supposed that the subject-proposition is the 'survival of the fittest' words in fittest relation during activity beginning in the right half of the brain," and that it "symbolises an internal relation of two images, internal in the sense that each of them is related to all other images already organised in us". On the other hand, "the object-proposition symbolises relation of these two images as for things in the environment, each of which images is related to all other images then organising from the environment". Thus "the two propositions together symbolise an internal relation of images in relation to an external relation of images". Dr. H. Jackson bases this distinction on Mr. Spencer's definition of a psychological proposition as compounded of two propositions (*Psychology* I., p. 162). We have to suppose, then, that the words of the recurring

utterance constituted the last subject-proposition (not completed to an object-proposition) when the patient was taken ill. In some cases it is possible to support this hypothesis by a reference to the facts. Thus the recurring utterance of a railway signalman taken ill on the rails was "Come on to me," or simply "Come on," and the pathetic utterance of a clerk who lost speech and became paralysed after hard work in making a catalogue was "List complete". If this hypothesis be correct, such utterances stand at the opposite extreme to that of old and perfectly organised utterances. They correspond to the latest and newest nervous actions. We have to suppose that in the healthy man there remains after every last utterance for a short time a slight degree of independent organisation of the nervous arrangements concerned; for without assuming this we cannot understand how it is possible to recollect what has just been said, and so to speak consecutively. In the case of the speechless man we must suppose that this normally temporary activity of nervous arrangements becomes permanent. There are strong reasons for saying that these recurring utterances are due to the activity of the right half of the brain. The left half is known to be extremely damaged. To say that the disease caused the utterances is absurd, for disease is simply a process of destruction. The positive mental symptoms arise during activity of lower centres or lower nervous arrangements which have escaped injury. Why they should arise after the injury is probably to be explained by the supposition that "destruction of function of a higher centre is a removal of inhibition over a lower centre". We must say, then, that while disease *causes* loss of speech, it *permits* the increased dischargeability of the right half of the brain. This increase of excitability on the removal of inhibition is commonly considered to be only temporary, but the particular activity may be kept up by repeated use; and this accounts for the recurrence of the utterance. In the case where there was no recurring utterance besides the deeply organised "yes" or "no," we have to suppose that when the patient was taken ill there was no subject-proposition "organising". And so there was nothing to interfere with the simple course of dissolution—namely, "reduction to the most automatic of all propositions". What applies to recurring utterances of propositional form probably applies also to jargon, which may be viewed as "made up of fragments of the words or phrases the patient was about to utter when taken ill". Thus it may be conjectured that the woman whose recurring utterance was "me," "pittymy," or "committymy," &c., was saying when taken ill, "Pity me, come pity me". This mixing up of words is illustrated by a reference to what takes place in slighter cases of aphasia, and even in a normal condition, as the utterance by a healthy man of "mukes from Boodies" for "books from Mudie's". These troubles of speech are probably due to hurried activity of the right half of the brain, involving a conflict of strong and sudden nervous discharges, during a state of emotional excitement. Such emotional excitement would naturally arise during the setting-in of the illness; hence the frequency of confused speech or jargon among forms of recurring

utterances. A similar line of remark applies to those recurring utterances which are clearly emotional, and consist of interjectional expressions as "fire!" "help!" We may suppose that in these cases the process of dissolution effected by the disease was so rapid and so deep that only the most organised utterance had a chance of surviving. "To recapitulate: By considering (1) the external circumstances at the time of the being taken ill; (2) the intensity of the emotional state under which the last attempt at speech was made; and (3) the gravity of the lesion, we may perhaps be able to show why this or that kind of recurring utterance remains in particular cases of speechlessness."

We now pass from the second kind of aphasia, Loss of Speech, to the first kind, Defect of Speech. Here the patient may be able to get out a word or even a reply as "very well," and go on uttering it in rejoinder to further questions to which it is irrelevant, being aware of its irrelevance. It becomes, in fact, a temporary recurring utterance. This "barrel-organism" (to use a phrase of Gardiner) shows itself also in writing. It seems doubtful whether the patient is able to repeat what he has said when he is told to do so. We must distinguish between the ability to say something for the sake of saying it and the ability to speak. The inability of the patient to say "no" when told to do so is of the same order as his inability to protrude the tongue when told to do so. Hence, it will be well to consider this feature of aphasia in connexion with other losses of voluntary power in disease. To understand these we must revert to the hypothesis of the duality of mental action, applying this now to the process ending in voluntary action instead of to that ending in perception or ideation. In voluntary operations we suppose there is a preconception; the operation is nascently done or "dreamt" before it is actually done. Thus, before I put out my arm I must have a "dream" of the hand as being already put out. To "will," to "know," to "intend," to "try," to "remember," are all names for this subjective reproduction which precedes objective reproduction. In the case of voluntary action the subjective order of the "dream" is the opposite to that of the actual operation; thus the image of the final stage of the movement, or rather its result, must precede the representation of the intermediate stages. And it is probable that subjective states always arise in an order the opposite to that of corresponding objective states. It is pretty certain that this is so in some dreams where a noise develops a dream, though the consciousness of it may come last in the dream it excites. So it is supposable that when we say "gold is yellow," the subjective order may be "yellow," "gold," "for our concern is first with the yellowness of gold, not with gold". In the case of automatic actions, too, there is probably a "dream," though here the movement has so often followed the "dream" that the two are nearly equally perfect and easy. Now, when the patient tries to put out his tongue, or to say "no" when told, and fails, we have to suppose that the subjective reproduction or

"dream" takes place without the second stage of objective reproduction.

Dr. H. Jackson concludes this paper by touching on other kinds of nervous affection which show something analogous to permanent "barrel-organism" (recurring utterances) of speechless patients. In these cases where temporary unconsciousness results from some injury, we find that operations going on when the unconsciousness supervened remained nascent during the period of total unconsciousness, and became active again during the restoration to consciousness, at the end of which stage they ceased. Such restoration means the return of control from higher centres, which is impossible in the case of "speechless" patients in whom the higher centres are destroyed.

JAMES SULLY.

KANT'S REFUTATION OF IDEALISM.

Professor Caird's answer, in the last No. of MIND, to my note in the preceding No., will at any rate be useful in preventing that confusion between his own doctrine and Kant's which his previous note seemed to me likely to cause. But on the historical point which I was further concerned to establish I have unhappily failed to make my argument plain to Mr. Caird; at least I cannot perceive that he has seriously attempted to meet it. Fortunately the amount of agreement between us—as I infer from his language and his silence taken together—is so considerable that I ought to be able to explain quite clearly the exact nature of our disagreement; which I may then leave to the judgment of the reader.

To prevent any necessity of referring to previous Nos. of MIND, I will begin by stating the points on which (as I understand) we are agreed.

(1) We agree in holding that, as soon as Kant became aware that Idealism had been imputed to him, on account of the doctrine expounded in the First Edition of the *Kritik*, he was seriously concerned to repel the imputation; not in consequence of any change of opinion, or any desire to conceal his real view, but because he honestly did not regard himself as an Idealist, and therefore did not wish to be so regarded.

(2) We agree in recognising that, in this attitude of mind, two different lines of reply to the charge of Idealism would naturally present themselves to him.

In the first place, he might say:—"I am not an Idealist, because I acknowledge the real existence of things-in-themselves, independent of our consciousness. I maintain, no doubt, that the manner of this existence is altogether unknown to us; but that has nothing to do with the question of its reality. And though I have called my doctrine Transcendental Idealism, that is no reason for confounding it with Idealism in the ordinary acceptance of the term; for the latter has been always understood to relate to the *existence* of material

things, whereas my so-called Idealism only relates to the notions (*Vorstellungen*) of them that we derive from their impressions on our senses." This I will call the Realistic answer.

The second, which I may call the Transcendental, answer, I will give, to avoid dispute, in Professor Caird's own words. Kant might say:—"I am not an Idealist, because I insist that we do know things out of ourselves; *i.e.*, things that are different from that series of inward states which constitutes the empirical self. The main aim of my Transcendental Deduction is to show that we are conscious of objects, and of a world of objects, not through mere sense, but only in so far as the one self manifests itself as a synthetic principle, which binds together the manifold of sense by means of the Categories. But the complementary truth is, that we are conscious of the permanent unity of the self in the succession of its feelings or conscious states, only in distinction from, and in relation to, a world of objects so determined."

(3) We agree in regarding these two answers as essentially distinct. Mr. Caird, as I understand, accepts the Transcendental answer as sound; while he considers it due to the "incompleteness" of Kant's system that he makes the Realistic answer at all.

(4) We agree in holding that, in one of the two main passages in which Kant replied to the charge of Idealism, the Realistic answer is undoubtedly given, *viz.*, in the *Prolegomena zu einer jeden künftigen Metaphysik* (§. 13, Anm. ii., iii.); while, on the other hand, the Transcendental answer is undoubtedly given in the 'Refutation of Idealism,' inserted in the Second Edition of the *Kritik*. Mr. Caird does not dispute the former of these propositions; and I certainly had no intention of disputing the latter.

The question on which we disagree is whether Kant himself distinguished the two answers as Mr. Caird and I agree in distinguishing them. I hold that he did not; and the ground I gave for holding this was not—as Mr. Caird seems to have understood—the language used in the 'Refutation' considered merely by itself, but a comparison of this with the language used in the corresponding passage in the *Prolegomena*. For the convenience of the reader I will place side by side the most important portions of the two passages; only adding that I think the case will appear even stronger to any one who compares the two contexts:—

Ich bin meines Daseyns als in der Zeit bestimmt bewusst. Alle Zeitbestimmung setzt etwas Beharrliches in der Wahrnehmung voraus. Dieses Beharrliche aber kann nicht etwas *in mir* sein; weil eben mein Daseyn in der Zeit durch dieses Beharrliche allererst bestimmt werden kann. Also ist die Wahrnehmung dieses Beharrlichen nur durch *ein Ding ausser mir*

Ich dagegen sage: es sind uns Dinge als ausser uns befindlichen Gegenstände unserer Sinne gegeben, allein von dem, was sie an sich selbst sein mögen, wissen wir nichts, sondern kennen nur ihre Erscheinungen, d. i., die Vorstellungen, die sie in uns wirken, indem sie unsere Sinne affiren. Demnach gestehe ich allerdings, dass *es ausser uns Körper* gebe, d. i., Dinge, die,

möglich. Folglich ist die Bestimmung meines Daseyns in der Zeit nur durch die Existenz wirklicher Dinge, die ich außer mir wahrnehme, möglich. Nun ist das Bewusstsein in der Zeit mit dem Bewusstsein der Möglichkeit dieser Zeitbestimmung nothwendig verbunden; also ist es auch mit der Existenz der Dinge außer mir, als Bedingung der Zeitbestimmung, nothwendig verbunden; d. i., das Bewusstseyn meines eignen Daseyns ist zugleich ein unmittelbares Bewusstseyn des Daseyns anderer Dinge außer mir.—(Kritik der reinen Vernunft, 'Elementarlehre,' II. Th., 1 Abth. ii. Buch, 2 Hauptst., 3 Abschn.)

obzwar nach dem, was sie an sich selbst sein mögen, uns gänzlich unbekannt, wir durch die Vorstellungen kennen, welche ihr Einfluss auf unsre Sinnlichkeit uns verschafft, und denen wir die Benennung eines Körpers geben, welches Wort also blos die Erscheinung jenes uns unbekannten, aber nichts desto weniger wirklichen Gegenstandes bedeutet.—(Prolegomena zu einer jeden künftigen Metaphysik, § 13, Anm. ii.)

I have italicised certain words in each passage, in order to show the complete identity of the cardinal terms used ("wirkliche Dinge außer mir" or "außer uns"). These, according to Mr. Caird's view, Kant must have consciously used in entirely different meanings in the two passages.

Now it seems to me in itself very strange that Kant should consciously adopt two essentially distinct modes of purging himself from the charge of Idealism, should put forward each separately in one of the two chief passages in which he expressly deals with the question, and yet should nowhere point out to the reader the fundamental difference between his two lines of reply. But, granting that he might have adopted this strange procedure, I maintain that it is more than strange—that it is simply incredible—that he should in the two replies have used the same cardinal terms in different senses, with a perfect consciousness of their equivocality and yet without giving a hint of it to the reader. This is the point to which I wished to direct attention in my former note; and to which—so far as I can see—Mr. Caird's remarks do not even suggest an answer.

But further I cannot understand how, without some such confusion of thought as that which I attribute to him, Kant could ever have regarded his Transcendental answer as a 'Refutation' of the problematical Idealism of Descartes. For when we conceive this answer with the distinctness with which Mr. Caird and I agree in conceiving it, it must be obvious that, as addressed to the Cartesian position, it involves a plain *ignoratio elenchi*. Descartes says: "I maintain what you call a 'problematical' Idealism; that is, I have in my mind the notion of a material world, substantially distinct from mind, but I have no clear and certain intuition that such a non-mental world actually exists; while I have a clear and certain intuition that I, as a Mind, actually am. I know that Matter *may* exist independently of mind; but that it does so exist requires proof." Kant answers: "I will supply the proof. What you call Matter is doubtless in its

elements mental : indeed, I show you exactly how it is constructed by the synthetic action of your thinking self out of your passive feelings : but I show too that you are necessitated to think of it as something distinct from your individual mind." Will not Descartes rejoin : "It will take a good deal of argument to make me accept this perplexing and self-contradictory position. But supposing I accepted it, I should regard myself as a 'dogmatic' and no longer 'problematical' Idealist ; for in spite of this invincible necessity of conceiving matter as distinct from my mind, I should, as you say, philosophically know it to be something made by mind out of mental elements. Call you this refuting Idealism ? I call it confirming Idealism."

And surely Professor Caird must so call it ; otherwise why does he wish to fix on Kantism, as he interprets it, this designation so vehemently repudiated by its author ?

I conclude therefore that Kant, when making his Transcendental reply to the charge of Idealism in the Second Edition of the *Kritik*, did not clearly separate it from the Realistic answer to the same charge which he had already given in the *Prolegomena* : so that in the former passage the phenomenal matter, whose permanence he regards as a necessary postulate of empirical thought, must be taken as carrying with it in unsevered connexion the "matter in itself," whose independent existence it "never entered his head to doubt". Nor do I think that any one who knows the *Kritik* will regard the fact, that Kant elsewhere clearly distinguishes his phenomenal from his noumenal object, as presenting any very serious obstacle to the adoption of my view.

One word more on the question of nomenclature. I quite agree with Mr. Caird that there are objections against the application of the term 'Idealism' to Berkeley's system ; but I think it would only make confusion worse to call it (as he proposes) 'Sensationalism' ; on account of the materialistic associations which are now firmly attached to the latter term. I should myself prefer to call it 'Mentalism' ; and I have, in fact, made a mild effort to bring this term into use—but, so far as I know, without success.

HENRY SIDGWICK.

P.S.—Since the above was written, I have discovered that Professor Adamson has taken my previous Note as the occasion of an Appendix (I.) in his recently published book *On the Philosophy of Kant*. Mr. Adamson, however, steers clear of the point of my argument even more completely than Mr. Caird, as he does not even allude to the passage in the *Prolegomena*. Hence the sole answer that I have to make to him at present is to draw his attention again to this passage. I do not see how, with these *Anmerkungen* ii. and iii. to § 13 before him, he can maintain that "the distinction between a thing and the representation or notion of thing" has "never," in Kant's writings, "any reference to the question of Noumena".—H. S.

I do not wish, any more than Mr. Sidgwick, to prolong a controversy, from which the vital point has been almost extracted ; but I understand Mr. Sidgwick still to maintain that, in the "Refutation of Idealism," Kant, while proving at best only that external experience is as real as internal experience, supposed himself to be proving also the reality of things-in-themselves as opposed to phenomena. This Mr. Sidgwick maintained (1) on the ground of the language of the passage in the *Prolegomena*; and (2) because he thinks, that, on any other supposition, Kant's argument against Descartes would involve a palpable *ignoratio elenchi*.

On the first of these points I answer that, in the passage in the *Prolegomena*, all that Kant says is that it is his doctrine that bodies, or "things given to us as objects of sense without us," have an existence in themselves, the nature of which we cannot know. In other words, external things are phenomenal of an unknown noumenon. I cannot see that this statement in any way authorises us to conclude that, in a passage written in quite a different connexion, in which Kant expressly and repeatedly declares that he is seeking to prove only that external experience is as real in its object as internal experience, he yet confused this proof with a demonstration of the reality of things-in-themselves. How could Kant, for a moment, suppose, that the permanent in time, which is known under the Category of Substance, is the thing-in-itself ? It should not be forgotten that the two senses of the words, "*außer uns*," are distinguished in a passage of the *Critique* (p. 200) which refers directly to the subject treated of in the "Refutation of Idealism".

Mr. Sidgwick further argues, that, without a confusion of the external object with the thing-in-itself, Kant's argument against Descartes must have been seen by himself to be an *ignoratio elenchi*. Descartes, however, according to Kant's view of him, had maintained that all we know immediately is our own inner experience ; and that matter (not merely things-in-themselves, but extended substance or things in space) is known only by inference, as the cause of some of our inner experiences. And Kant's answer is, that external experience cannot be less immediate than internal experience, seeing the latter presupposes the former. That Descartes mistook matter for a thing-in-itself is, in fact, just Kant's charge against him : it is what Kant means when he says, that transcendental realism necessarily leads to empirical idealism. "It is the transcendental realist who is inevitably led afterwards to play the part of an empirical idealist ; for, as in the former character, he has presupposed of the objects of sense that, if they are external, they must have their existence in themselves, apart from sense, he is obliged from this point of view to hold that none of the representations of our sense are able to assure us of their reality" (p. 296). In other words, he who takes the externality of matter to mean that it is a thing-in-itself, and not an object of sensible experience, must inevitably be led to the conclusion that its existence is problematical, as being reached only by inference.

That Kant had two ways of opposing Idealism, was an inevitable result of his twofold distinction between phenomena and noumena and between the object of internal and of external experience. I may add that in the passage in the *Prolegomena* there is no argument, but only the assertion of his own belief in the existence of things-in-themselves. The proof of that existence is given elsewhere in the *Critique of Practical Reason*.

EDWARD CAIRD.

DR. WARD ON FREE-WILL.

In a series of metaphysical discussions contributed, since 1871, to the *Dublin Review*, Dr. Ward has laid particular stress on three topics as more especially involved in the philosophical foundations of Theism. These are Innate Conscience, Necessary Truth, and Free-will. His later papers have reference chiefly to the last-named topic—Free-will, which he has expounded at considerable length, in accordance with his own views; and, in so doing, he has combated the arguments on the other side. In this polemic he has largely involved both John Mill and myself. I replied to some of his criticisms in the present edition of *The Emotions and the Will*, and to this reply he has now made a rejoinder (*Dublin Review* for April, 1879, with supplementary paper in October).

Neglecting the minor objections brought by Dr. Ward against the language that I employed in remarking upon his earlier article in April, 1874, I wish to summarise his positions, as well as I am able, and to consider their bearing upon the controverted points.

I have on every opportunity protested against the use of the leading term "Freedom" as applicable to the Will, or as suitable to express the sequence of motive and act in our mental activity. I see no chance of a reconciliation of the opposing views until this term is abandoned, and the question stated in other phraseology, such as I have repeatedly exemplified. Not only in the leading term, but in many of the subordinate expressions, do I consider that there is an unsuitability that contributes to the entanglement. I remarked upon some of these in a Critical Notice in *MIND* III., p. 393, to which I feel scarcely able to add anything new.

When Free-will meant that actions could arise without any motive, or definite mental antecedent, the issue was tolerably clear; and the polemic of the necessitarians was directed accordingly. The subtlety and penetration of Hobbes led off the fight. Then came Locke, who was the first to comment upon the impropriety of the word "Freedom". But most exhaustive of all is the work of Jonathan Edwards, which, as a powerful advocacy of Necessity in the interest of Theism, might, I think, have received some notice from Dr. Ward. Even Mill, in the *Examination of Hamilton*, considered that "uncaused volition" was the thesis that he had to refute.

Now, however, there is a change of front among the Free-will advocates. They object to being charged with maintaining uncaused volition. For example, Dr. Calderwood, in his *Handbook of Moral Philosophy*, says—"Whatever be the nature of the problem, it certainly does not stand thus:—Is a volition an uncaused event? Are there any facts in consciousness which cannot be attributed to any cause?" In like manner Mr. Alexander, in his very acute polemic with Mill, disclaims the abrogation of the law of cause and effect in human actions. Reid had affirmed very bluntly that acts are often done without any motive.¹

¹ "I do many trifling actions every day, in which, upon the most careful

My chief business at present, however, is with Dr. Ward, who has bestowed more attention upon the controversy than any one that I am acquainted with. I shall commence with endeavouring to set forth his positions as fully and as accurately as I am able to do in a short compass. Although I have read all his articles on the subject, I will not undertake, in my references, to go beyond those of the year just concluded; taking for granted that he has embodied in these whatever he considers important in the exposition and advocacy of Free-will.

My difficulty in arguing the question has always consisted in grasping clearly what Free-will means. I wish the doctrine to be translated into some other terms such as we cannot possibly misapprehend. It is a great convenience, so far, when the phenomenon is represented as an exception to the uniformity of nature. Uniformity is an intelligible fact; and to deny it seems equally intelligible. Yet as every denial supposes something positive, we should like to know a little more about the class of actions that are emancipated from the rule of uniformity. Whether do they begin from absolute nothing; or do they possess antecedents, but shift about from the one to the other, so that from the occurrence of a given antecedent we cannot conclude what the consequent is to be? We should like also to have the region of failure of uniformity closely circumscribed. Where there is no uniformity there is clearly no rational guidance, no prudential forethought.

I come now to Dr. Ward's mode of representing the doctrine of Free-will, and of establishing it from our mental experience. It consists in what he terms "anti-impulsive effort," or what is spoken of more familiarly as "self-control" or "self-restraint". This, of course, is no new phenomenon in human experience; it is spoken of in every account of the constitution of the mind. The novelty lies in treating it as a sure and unequivocal argument for Free-will, considered as an exception to the ordinary law of causation or the uniformity of nature.

That we may understand Dr. Ward's position thoroughly, let me quote, first, his other ways of putting it, and next, some of his characteristic examples. The question is, he says, "Do I, or do I not, at various times act in resistance to my strongest present desire?" The Determinists say "the will is infallibly determined by what they call the strongest motive"; Dr. Ward holds that the strongest motive may be overborne by the will's spontaneous impulse. The Determinists hold, he says, that conduct follows the balance of pleasure and pain; Libertarians believe in a power exercised in the

reflection, I am conscious of no motive." "If a man could not act without a motive, he would have no power at all; for motives are not in our power." (Hamilton's Edition of *Reid*, p. 609.) As to the first remark, I presume Reid refers to the things that we do in a half-conscious mechanical way. Yet, whether or not a motive, in the ordinary sense, be traceable, an antecedent situation is traceable, which arising, the action regularly follows. The second sentence is a manifest confusion of ideas, which Hamilton effectively exposes.

direction of pursuing virtue in opposition to the solicitations of pleasure. The self-restraining exercise of Free-will is put forth with immeasurably greater frequency in the direction of virtue than in that of pleasure. Yet all men—good, middling, and bad alike—are equally free. The Determinist's theory is that no man resists his strongest present impulse ; and his theory is refuted if it be shown that a large class of men do often resist their strongest present impulse.

I will now present some of Dr. Ward's examples. "I am walking for health's sake in my grounds on a bitterly cold day. My strongest present desire is to be back comfortably in the warm house ; but I persistently refuse to gratify that desire ; remembering the great importance of a good walk, not only for my general health, but for my evening's comfort and my night's sleep." Again—"A is called very early on the 1st of September, and he feels a real 'desire' to sleep off again ; nevertheless, his wish to be early among the partridges is a stronger, more influential, more keenly felt, more stimulating desire." Accordingly, "his 'preponderating spontaneous impulse' is to get up at once." "But B, who is no sportsman, has also ordered himself to be called early the same morning, for a very different reason. He will be busy in the middle of the day, and he has resolved to rise betimes, that he may visit a sick dependent. When he is called, his strongest present desire is to sleep off again ; but he exerts himself ; he puts forth manly self-restraint, and forces himself to rise, though it be but laboriously and against the grain. A starts from bed by a spontaneous and indeliberate impulse ; but B resolves weakly and fails, until he at last succeeds by a still stronger and crowning resolve in launching himself on the sea of active life." "A *obeys* his strongest present desire, while B *resists* it."

Once more :—"A military officer—possessing real piety, and steadfastly purposing to grow therein—receives at the hand of a brother officer some stinging and, as the world would say, 'intolerable' insult. His nature flames forth ; his preponderating spontaneous impulse—his strongest present desire—is to inflict some retaliation, which at least shall deliver him from the 'reproach' of cowardice. Nevertheless, it is his firm resolve, by God's grace, to comport himself Christianly. His *resolve* contends vigorously against his strongest present *desire*, and the latter is brought into harmony with his principles. What sustained series of intense anti-impulsive effort is here exhibited !" "The two classes of effort mutually differ, not in degree, but in kind."

Such are Dr. Ward's examples of anti-impulsive effort which he identifies with Free-will. They are in themselves perfectly familiar to us all ; and the only difference of opinion is as to the mode of rendering or interpreting them. Before entering upon this, however, I wish to complete the statement of Dr. Ward's positions by quoting his view of Causation, which is vital to the discussion. He protests against using the terms "free" and "uncaused" as synonymous ; but he differs from Determinists in the meaning that he attaches to cause. In fact, he recognises two kinds of causes ; one is cause, as

understood by Determinists, namely, the law of uniform phenomenal sequence. He gives the designations "prevenant" and "postvenant" to express cause and effect, in this sense; and "prevenance" to express causation as uniform sequence. He allows that the physical world, generally speaking, is ruled by this kind of causation, the important exception being miracles; and the moral or psychical world is also ruled by it, with the exception of the human will, which partly participates in it and partly follows another law. The causes of the material world, uniform in their action, are "blind" causes; and such causes are also at work in the mind. By these, "given certain psychical and corporeal antecedents, one definite group of psychical consequents infallibly and inevitably follows". But now we can imagine that there may be an "*originative*" intermediate cause. We can easily imagine that some substance shall not be determined by its superior cause with strict and inevitable necessity to one fixed effect; but, on the contrary, shall be permitted a certain latitude of choice. The very same substance may be necessitated to act as a "blind" cause in regard to one class of its effects, while nevertheless it can act as an "*originative*" cause in regard to another class; it being involved in the whole supposition, that the substance which acts as an originative cause must be an *intelligent* substance, such as is the human soul. While this case is clearly imaginable, no one, Dr. Ward thinks, has attempted to show that it is intrinsically impossible. Now the notion of freedom is included in the notion of an originative cause.

Dr. Ward does not think it necessary, in explaining Free-will, to introduce, as many Libertarians do, a reference to the human personality, or the "Ego"; and not finding this necessary, he does not think it desirable.

I will remark, first, on Dr. Ward's statement of the second kind of Causation—that wherein uniformity is not the rule. My difficulty is, and always has been, to reduce this position to a definite and intelligible statement. What uniformity is, we understand; its negation or qualification leaves us utterly at sea. There are two alternatives in the denial of uniformity, the one that events can arise from nothing, the other that the sequences of events may vary; the same antecedent situation being followed sometimes by one consequent and sometimes by another. Dr. Ward appears to repudiate the first alternative; he will not allow, so far as I understand him, that Free-will is the same as actions arising from nothing at all. Indeed, the expression—"originative intermediate cause," coming in to counter-work our present impulses and desires, means an antecedent adequate to the result.

The only position, then, as regards our voluntary actions, is, that there is not a strict invariability of sequence in those cases where we put forth a virtuous effort to resist our rash and passionate impulses. The same mental situation may recur; but the outcome may be different—for the better or for the worse. It is necessary to our dignity as moral agents that we should not decide always one way when the same case comes before us. Freedom of choice is illustrated

by our occasionally choosing the less good, like a bold fault in a correct poet.

When Free-will is stated in this form—and it clearly admits of being so stated—we cannot help being staggered by the assumption. Before considering the facts offered by way of proof, we may reflect a little upon the intrinsic difficulties of the statement itself.

It could not escape remark, how dependent we are, in all the affairs of life, on nature's uniformity. If we wish to secure an end, we look to what has happened in the past, and count upon that in the future. Our whole security in the matters of this world is based on the expectation that what is to be may be inferred from what has been ; and this not merely in the region of brute matter, but equally so in the region of mental sequences. That there should be any part of the mind, owing to superior sanctity, exempted from the rule of uniformity, must make us very uneasy, until we can trace a circle round it, so as to hem it in and keep it clearly apart from the region where law prevails. We should be very much relieved to think that it was but a very small portion of our mental nature ; and, if I may judge from my own feelings, we should be still more rejoiced to find that the whole supposition was a mistake. Of course, we can always make allowance for a margin of uncertainty ; being obliged to do so, in many instances, not from the variability of the sequences, but from the impossibility of calculation.

Dr. Ward says that no philosopher, so far as he is aware, has attempted to show that the supposition of an originative cause, exempted from uniformity, is impossible. This much, however, we may say, that *uniformity is found to be the rule of nature in all cases sufficiently free from ambiguity to be admitted as evidence*. The more plain a fact becomes, the more certain is its testimony to the principle of uniformity. Look at the grand case of gravitation, on which all Astronomy and all Navigation are suspended. There was a time when people might have advanced a doctrine of variability of sequence in celestial phenomena, being sheltered by the imperfection of the then knowledge of the facts. Look at the atomic theory in Chemistry. Look at the doctrine of Life springing from Life. All the clearly ascertained facts point one way ; while the facts not clearly ascertained are those alone that give any colour to the supposition of variability of sequence. Now, I humbly submit that, in such a situation, the Ayes have it. The clear facts are unanimous ; the obscure facts are at best ambiguous ; and an ambiguous testimony can never be set against one that is unambiguous. A hundred clear instances one way cannot have their force impaired by five hundred uncertain instances.

If there be exceptions to the uniformity of nature, they ought ere now to have come to view in some unmistakable cases. A doctrine that can be maintained only in the regions of clouds and darkness, is not competent to establish a negative to another doctrine that is more and more confirmed as we can bring the phenomena into the light of day.

This brings me to Dr. Ward's examples whereby he thinks he can prove that the ordinary law of uniformity does not apply to human actions throughout. Freedom is typified, according to him, by the mind's resistance to the solicitation of present impulses. Now, as I have endeavoured to analyse this situation in the series of chapters that I have devoted to the explanation of the Will, I can do little more than repeat myself in saying that the mind's anti-impulsive efforts are due to the stored-up recollections of the past, and are no more exempted from the law of uniformity than the impulses of the present are so exempted. Take Dr. Ward's instance of walking in a cold wind to avoid sleeplessness and other discomfort. I can say, on this, merely that the recollection of former occasions of discomfort from being too much indoors is a motive power to withstand the urgency of the present discomfort of cold. It is a fact or law of the human mind, constituting what I believe to be the psychological explanation of prudence, that the remembrance of pain is an inducement to avoid re-incurring it; the power of the inducement being in proportion to the vividness of the representation of the past; and this again depending upon repetition and other circumstances that I have endeavoured to specify. When a strong present impulse arises such as to urge us in the direction of the dreaded evil, two powers are in conflict; each having a certain impetus, and the result shows their relative force. Often the present impulse carries the day at once; at other times, there is an even and protracted conflict, which usually consists of a swaying to and fro, owing to the vacillation in the representative power. If, in this nearly balanced situation, the throw is given for prudence at last, we are said to have maintained a fierce struggle, and to have made a great effort for the right. There is no effort when the representation of the past has attained the pitch that time and repetition often brings it to; the virtuous resolution is taken with ease; it is anti-impulsive without effort; it exercises control not by freedom of the will, but by the psychological law of the stronger. He that has had few experiences of catarrhs or of rheumatism from catching cold gives way to his impulses to go fishing, or shooting, or boating in the wet. The accumulation of the painful experiences, the augmentation of their severity and persistence, becomes a power sufficient to arrest the impulses to sport. There is a growing efficacy in such resistance. Beginning in the day of small things when the impulse always conquers, the representation of the pains rises to the point of an equal struggle, when the mind is torn and tossed about for a length of time, showing the anti-impulsiveness in its most painfully conscious form, the form where effort is typically present. A few more additions to the ideal growth, or, it may be, a subsidence of the eagerness for sport (which equally comes by the operation of a psychological uniformity), renders the conquest rapid and sure, and the accompanying consciousness of struggle and effort is less and less. The temperate old man lets the wine-bottle pass again and again without the slightest pang; his so-called liberty of the will is a glorified uniformity of easy resistance to alcoholic temptation.

It is quite true that at the same stage of representative growths of past good and evil, we may not always decide in the same way, even with an equal present impulse. In the wide compass of human motives there are numerous agencies to concur or conflict with the virtuous resolve, and these may not always be evoked. It is part of the operation of circumstances to bring up or to exclude emotional influences and recollections; our prudence, as depending on personal experience, would be greatly augmented by the concurring view of some other victim to the mischief that we are tempted to incur. But such variations have nothing to do with lawlessness, or the breach of uniformity of sequence, in human actions; we can state them to ourselves as the proper and regular course of natural law under the several circumstances.

What I have now stated is but a poor epitome of the detailed explanation of motives in my discussion of the Will. I do not ask Dr. Ward to accept the explanation as in all respects satisfactory and complete. My present argument merely requires that there should be a possible alternative to the supposition that the Will is not subject to the rule of uniformity. So long as there is no unequivocal instance on his side such an explanation deserves to be listened to. It now remains to consider still more closely his instances of anti-impulsive effort, with a view to see how far the exclusion of law or uniformity in the usual sense is thoroughly carried out.

The following is a very remarkable statement:—"We need hardly say that, in our view, devout Theists are immeasurably the most virtuous class of human beings. Consequently, in our view, devout Theists will, with absolute certainty, immeasurably exceed other men in their anti-impulsive efforts; for the simple reason that they immeasurably exceed other men in the vigilant care with which they adjust their volitions with a standard which they consider supremely authoritative."

I call attention to this statement as being, to my mind, an admission that virtuous anti-impulsive efforts *follow certain conditions*, or arise under a certain definite set of circumstances, in whose absence they would not arise. It is, to all intents, a Determinist account of the source of virtuous actions. Given devout Theism, anti-impulsive efforts on the side of virtue follow by a law of human nature. An agent is assigned adequate to an effect. Where is the room for freedom or for any "originative" intermediate cause? The devout Theism is the cause. Any other cause would be either an addition to the force of this cause, or a diversion for the worse. But any addition made to the regular effect of devout Theism may be taken *as part* of that agency; it need not be separately viewed unless it follows an independent course; while such independence would only throw the result into uncertainty; the devout Theism would no longer work out its proper result.

If it be said, as Dr. Ward maintains, that the agent is still free, I can only ask, What does the freedom amount to? The end of all is to make a man perform virtuous acts. If, to illustrate his freedom, he

deviates from this course, what is the gain? and if, in a definite situation tending to virtue, the agent acts virtuously, this is merely a form of Determinism. Why should the devout Theist be ashamed or affronted at being described as following the "law of his being"?

Dr. Ward remarks that the Phenomenist is compelled by his philosophical theory (if he be consistent) to be proof against any amount of testimony which may be adduced for the fact of freedom, viewed as an interruption of the order of cause and effect. But most of us embrace phenomenism because we have never had such testimony presented to us. Dr. Ward justly describes the exception as of the nature of a miracle; now, he will allow that, being so, it demands very clear facts to prove it. What interest can any one have to hush up such an extraordinary circumstance; or how could one possibly hush it up if every man carries about in his own mind the evidence for it?

Thus the standing difficulty in Dr. Ward's whole argument is that he mixes up freedom with other agencies that, for aught we can see, might of themselves produce the whole effect. He cannot isolate the phenomenon of freedom so as to put it to a crucial test. The following passage is a further illustration:—The "devout man—even when his will's spontaneous impulse leads to a virtuous act—proceeds nevertheless by an effort to make his act more virtuous (*i.e.*, more efficaciously directed to the virtuous end) than otherwise it would be. The advantage, then, of virtuous training and habits is not less inestimably great on the Libertarian than on the Deterministic hypothesis." Just so; but then, how are we to separate between what comes from the natural operation of virtuous training and what comes from Free-will? Devout Theism with virtuous training has a definite result on the ordinary law of phenomenal cause and effect; we can apply ourselves to bringing about these antecedents, in order that the effect may follow, and we can do no more. Liberty, as such, is an uncontrollable factor; we accept its behests, but cannot improve upon them. We cannot even measure its range; its amount is not sufficiently great to overpower unmistakably the blind causes; it must be one of those small agents that are swamped by the larger; its amount does not surpass the inevitable errors of observation.

The restraint of passing impulses by the permanent forces of the mind is a fact of incessant occurrence. It arises sometimes in the interest of virtue, sometimes in the interest of vice, and oftener still on occasions that are perfectly neutral. It occurs to everybody scores of times every day. We must all be aware that we are, generally speaking, tolerably uniform in our conduct in these respects; what we resist once, we resist again; what we succumb to once, we succumb to again. There are exceptions, of course; but we are seldom at a loss to account for these. The drunkard is sometimes reformed, yet not without a new antecedent, a moral force that is sufficient to the result. Determinists allege as psychical fact that volitions follow determinate moral antecedents with the same uniformity and certainty as physical effects follow their physical causes; that the will's course of

action is infallibly and inevitably determined at every moment by the circumstances (1) internal, (2) external, of that moment. On the other side, says Dr. Ward, "we have entirely denied this alleged psychical fact; in support of that denial we have appealed to a thousand undeniable mental phenomena". Now, I freely admit the phenomena adduced; I merely call in question the way of reading them. All that I can observe of their workings is in favour of uniformity; and I think that if there were exceptions, they must, at some time or other, appear in a form that no one would or could deny.

Dr. Ward abstains from all reference to the vexed question of Materialism, which is brought forward, in connexion with the present question by many advocates of Free-will. I do not think it requisite to mix the two questions; yet there is a mutual bearing that it is well that we should keep in view. Those that believe that to every mental fact there is a counterpart physical fact, are led to the uniformity of mental sequences on the basis of physical uniformity. Those that affirm Free-will, in the sense of variability of sequence, cannot admit that the mental and the physical go together. Whatever strength there is in the case for the full concomitance of the mental and the physical goes to confirm the doctrine of Determinism as against Free-will.

Dr. Ward is not the only sincere and cultivated enquirer that has been oppressed with the difficulty of reconciling law with our supposed Free-will, or liberty of choosing for our own good. The late distinguished political economist, Cairnes, and Mr. Goldwin Smith, are examples among many that have announced themselves as unable to discover a way out of the apparent contradiction. I have assigned, as one cause of the perplexity, the unappropriateness of the figurative word "Freedom"; and, as another, the awkwardness of the point of view when a man looks at himself in the act of willing between several alternatives. In the Critical Notice already referred to (MIND III., p. 398) I dwelt upon this last point, and have nothing new to bring forward respecting it.

A. BAIN.

VII.—CRITICAL NOTICES.

On the Philosophy of Kant (Shaw Fellowship Lectures). By ROBERT ADAMSON, M.A., Professor of Logic, Owens College, Manchester. Edinburgh: David Douglas. 1879.

In this little book, Professor Adamson has undertaken no easy task. He has attempted, in the space of about 250 pages, to show the general bearing of the work of Kant, and its relation to those philosophical problems which are at present calling most urgently for solution. And in this attempt I think he has attained a high measure of success, allowing for the limits imposed upon him by the Shaw Lectureship.

Indeed, no more weighty contribution has in recent times been made to the criticism of Kant, or of Kant's critics.

Professor Adamson begins by showing that the recent revival of the study of Kant has been a necessary consequence of the main scientific and philosophic currents of thought of the time. In this country it has been caused chiefly by a deeper apprehension of the sceptical consequences which Hume had drawn from the philosophy of Locke (consequences which for a time had been obscured by speculative compromises such as those which constitute the philosophy of Mill). In Germany, the advance of science itself has caused a need to be felt for the reconsideration of the ultimate problems of metaphysic. The question of the position of the knowing subject and his relation to the world of objects, in distinction from which he is conscious of himself; the question of the nature and mode of existence of the world which he knows, and which, as known, seems to be in some kind of dependence on the knowing subject; finally, the question of the position of man as a "concrete living agent," who is at once "an individual moved by individual passions," and a spiritual being conscious of himself as a responsible member of a moral order—all these questions were for the first time stated, or at least stated in the form which they must have for the modern world, in the philosophy of Kant. He first had clearly realised the double aspect of man's life as an individual who yet is not confined to his individuality, but transcends it even as a subject of knowledge or experience, and still more as a being capable of morality and religion. And he was the first who from this point of view attempted to solve the fundamental problems of Metaphysics, of Logic, and of Ethics.

Professor Adamson's discussion of the work of Kant takes the form of a polemic against two classes of Kant's interpreters—those who have regarded him as a Psychologist, or, in other words, who have confused the psychological with the transcendental problem; and those who have regarded him simply as an Agnostic, whose highest object was the limitation of knowledge to the field of experience or sense-perception. The great difficulty of setting aside such interpretations lies in the fact that, in both respects, the philosophical critic has to contend not only against the expositors of Kant, but also to some extent against Kant himself. For Kant, in his exposition of his transcendental theory, seems frequently unable to throw off the influences of the very individualistic psychology against which he is contending; and he often speaks of the distinction of phenomena and noumena, and of the limitation of our knowledge to the former, in words which are eagerly repeated by the Agnostic as a confirmation of his own opinions.

Professor Adamson's first and part of his second and fourth Lectures are devoted to the disproof of the psychological interpretation of Kant's transcendental criticism of knowledge. The question of Kant was, how the knowledge of any fact as such is possible; a question which it is idle to attempt to answer by showing the relations of one set of facts to another. An object is an object only for a

conscious subject ; hence all science pre-supposes the general conditions of thought, under which alone objects can be known as such. Psychology is a science which deals with one order of facts among others, and cannot furnish us with a *prima philosophia* which shall refer to all objects whatever. The transcendental problem is therefore utterly obscured by those who, in spite of Kant's own warning, put the doctrine of the ideality of time and space on the same level with the subjectivity of secondary qualities ; or those who suppose that physiology or psychophysics can throw light upon the conditions under which all objects are known. One of the greatest sinners in this way is Lange, the author of the *History of Materialism*, of whose so-called Kantianism Professor Adamson gives us in his fourth Lecture a very thorough and conclusive criticism. Lange, like many others, treats the "organisation" as the determining condition of all thought and knowledge, while he at the same time declares that the organisation itself is merely an "idea," or a collection of ideas.

The excuse for such misinterpretation lies in the ambiguous language of Kant himself, which is partly to be explained by the genesis of the Kantian philosophy. Kant's criticism of the philosophy of Leibnitz had, at an early period, brought him to regard thought as purely analytic in its movement, and even to accept the doctrine that the content of knowledge must be given in sense. Hume convinced him that through sensations purely as such, no object can be known. The effect of this double perception of the inadequacy of previous philosophy shows itself in the *Critique* in a two-sided polemic against those who conceive that knowledge is possible through pure sense, and against those who conceive that it is possible through pure thought ; and Professor Adamson is, I think, right in saying that it is Kant's continual shifting from the one opposition to the other which perplexes his statements and makes him seem alternately to grant the position of each of these philosophers in order to disprove the position of the other. Hence, while Kant's argument shows at one time that sense is nothing for us apart from thought, and at another time that pure thought is as good as nothing for us apart from sense-perception, he seldom states quite clearly that the union of these two factors is "organic and necessary," but rather appears to leave them as disparate elements, which must be combined in order to the possibility of experience, but which in themselves have no necessity for this combination. Farther, instead of the required unity, he presents to us certain mediating principles, which are often spoken of as if they also were independent, like the factors between which they mediate.

In these circumstances, the business of the critic of Kant is to bring his different statements together, and to explain their apparent discrepancy. In doing so, he has often a choice between two alternatives : either to suppose that Kant had not completely freed himself from the influences of the theory he was opposing ; or to understand his statements as in certain cases designedly imperfect and meant only to illustrate the one particular point with which he is engaged at the moment. And sometimes it may not be easy to determine which of

these explanations should be preferred. We must always remember that Kant was for the first time making his way into a new region of speculation. "If we had seen these roads before they were made," we should have better understood how difficult it was for Kant to find the appropriate ways of expression for the new and original theory which he had to express.

Two instances of this kind of difficulty may be mentioned. In the *Prolegomena*, in distinguishing between judgments of perception and judgments of experience, Kant seems to confuse the general question as to the conditions of experience, with the particular question of determining the place in the content of experience into which a given fact is to be brought. Thus, when Kant says that the judgment, "when the sun shines, the stone becomes warm," is a judgment of perception, which becomes a judgment of experience by being brought under the category of Causality, he for the moment leaves out of account that, on his own principles, the former judgment no less than the latter involves the conception of the world as a system of substances, whose successive states are causally determined in relation to each other; and that the only question is as to whether in one particular case two facts are to be causally connected. We do not, however, need to suppose that Kant forgot this, but only that he was desirous to illustrate his idea of an objective judgment, or judgment of experience; and that, therefore, for the moment, he abstracted from the fact that, on his own theory, the determination of any change as such involved its causal determination in relation to preceding changes, though it may be that our first judgment has not hit upon the change in reference to which the particular event in question should be determined. (*Cf.* pp. 34, 205 of the present work.)

The Deduction of the principle of Causality as it stands in Kant's second Analogy, raises similar difficulties, on which Prof. Adamson has thrown much light. In that deduction, Kant attempts to show that the perception of change, or the objective succession of different phenomena, involves the principle of Causality, or is possible to a self-conscious being only on condition that the principle holds good. The proof of this, on Kantian principles, involves the following steps:—First, that the mere succession of sensations does not give us the means of determining successive events in time as such; for a series of sensations cannot even be conscious of itself as a series. Secondly, that this determination cannot be got from time itself; for time by itself cannot be perceived, nor can events be dated in relation to time but only in relation to other events. Thirdly, that, therefore, in the apprehension of change, there is involved a synthetic act, by which we determine the phenomenon in question in relation to a previous phenomenon, in accordance with a category or schematised conception of relation, and that the category in question is Causality.¹ Now it is in stating *the first* of these points

¹ To complete the proof, we should need to take into account Kant's view as to the connexion of the principles of Causality and Substance. But it is not necessary to discuss this point here.

that Kant seems to fail, for instead of speaking of a series of sensations, he says that the apprehension of the manifold of phenomena is always successive, whether the order of the perceived phenomena is so or not ; and illustrates this by the case of a ship drifting down a stream, whose successive positions can only be perceived in one order, as contrasted with the case of a house, whose parts can be taken in any order. He thus seems to admit not only a succession of sensations, but the perception of a succession of appearances as such, prior to the application of the category, which yet, he seeks to prove, is the foundation of our perception of objective change. Professor Adamson thinks that this is to be explained by the fact that Kant is here merely enforcing "the doctrine that determination of *existence* in time is distinguished from construction of an intuition which may or may not correspond to existence, simply by the thought necessity of order in the perceptions themselves" (p. 63). But, while expressing this, Kant's words suggest that the intuitions, apart from the synthesis of the understanding, are known as successive *appearances*, though not as an *objective* sequence of events ; as in the passage in the *Prolegomena* (p. 48), where Kant says that "the senses set the planets before us now as moving on in their course, and again as turning back, and in this there is neither falsehood nor truth, so long as we are content to regard it all as mere appearance, and to make no judgment in regard to the objective character of the movements". Kant, in fact, seems here to use the particular case of the indeterminate order of the parts of the house to illustrate the general indeterminateness of the sequence of perceptions not brought under the category, and to abstract from the fact that a succession of perceptions or appearances, determined as such, already implies the category as one of the general conditions of experience. Or, if this is not so, we must regard the passage as indicating a relapse towards that psychological point of view, against which, in the main, Kant was contending. (*Cf.*, however, Professor Adamson's remarks, pp. 59-66, 210-14.)

The second part of Professor Adamson's argument, which is directed against those who would reduce Kant to a mere Agnostic, must be more briefly summarised. To state, as the whole result of Kant's criticism, the bare doctrine that knowledge is limited to phenomena, is misleading. For this statement "fails to bring into due prominence the deeper elements of Kant's doctrine, and robs of all significance his rich developments on the ultimate problems of metaphysic." It is indeed literally true that Kant denies the possibility of knowing things-in-themselves ; but the 'thing-in-itself' is with him by no means a mere name for the unknown and the unknowable. Represented at first, in the beginning of the *Critique*, as the unknown cause of a sensuous affection, it becomes changed, as we advance to the 'Dialectic,' into the noumenon, or idea of completed synthesis, by means of which we criticise our actual knowledge and discern its limitation. The real, which is contrasted with the phenomenal, is, therefore, not simply a negation ; it is the counterpart of an ideal of knowledge, which we cannot realise, though the conception of it is necessarily bound up

with the empirical knowledge which we *can* realise. This ideal is involved in self-consciousness, which is thus not only the source of the categories, the principles of unity in the world of experience, but which also puts us in relation to an intelligible world, in contrast with which the world of experience is seen to be merely phenomenal. Further, the idea of this intelligible world, which is *problematical* for reason in its theoretical use, receives an *assertorial* value from the practical reason, which obliges us to think ourselves as members of a 'kingdom of ends,' and to regard the phenomenal world as causally determined by the world of noumena. Finally, this causal determination of the phenomenal by the noumenal, which in itself seems to be an unintelligible union of opposites, is brought within the reach of thought by the *Critique of Judgment*, in which the application of the idea of an end to organised beings, and also to Nature as a whole, is vindicated as a necessary mode of thought, though it is denied to have the value of knowledge.

Professor Adamson does not attempt to criticise the Kantian system in detail, but he briefly points out what are its main defects. In the first place, the imperfect distinction of Kant between sensation and perception leads him to treat the sensible as such as an element of knowledge, and indeed as the element which alone gives reality to knowledge, whereas "the sensation, as such, never appears except in the perceptive act". "It is quite impossible for Kant to maintain both that unity of consciousness, and therefore thought, which goes beyond the individual fact, is indispensable for perception; and also that the only real factor in perception is that which, *per se*, is not for intelligence at all." In the second place, when the force of this criticism has been felt, the opposition between the phenomenal and the noumenal takes a different aspect. Experience, or our knowledge of the world under the categories of substance, causality, and reciprocity, is condemned as knowledge of the phenomenal, not simply because we want the necessary sense-perceptions for any higher knowledge; but it is so condemned because these categories are in themselves inadequate and limited. This inadequacy may be seen, not only from the paradoxisms and antinomies to which they give rise, when applied to the noumena, but because they are antinomical in themselves, and cannot therefore be the ultimate forms of knowledge. On the other hand, the ideal of completed knowledge, or of an intuitive understanding, must not be regarded, as it is by Kant, as a mere identity which excludes all difference. Self-consciousness, which expresses itself in the categories of the understanding, and thus produces what Kant calls experience, is obliged by its own nature again to transform the experience thus constituted by means of the ideas of reason. In fact, reason must be regarded not simply as opposed to the understanding, but as a higher form of it, or as a higher stage of the same process. Hence the knowledge which we have of the unconditioned, of the object of reason, cannot be regarded as "a knowledge of it apart from the manifestation, which is an essential factor in it". It is because he does not perceive this, that the thing-

in-itself with Kant seems alternately to shrink up into the mere identity of abstract being, and to expand into an idea of the unity of Nature and intelligence. But the final significance of his philosophy lies in the latter and not in the former interpretation of it. "Throughout the development of his philosophy, we can trace the successive steps by which he endeavoured to render more and more concrete the ideal of supreme intelligence, but even in the final form of his metaphysic, from his peculiar conception of the isolated and sensuous impression as that which immediately brought us into contact with reality, and therefore of thought as merely secondary and in itself devoid of content, the old opposition appears between speculative knowledge and practical conviction." But "the full development of what is involved in Kant's original question, How is experience at all possible? would lead to a different conception of the relation between the elements, which appear subjectively as Reason and Understanding, objectively as the super-sensible in Nature" (p. 153).

I have been compelled to confine myself to a mere outline of the general argument of Professor Adamson, without taking notice of many important discussions of particular points in the Kantian philosophy which occur in the course of it. I am afraid that such an outline must compress beyond the limit of intelligibility what is already stated by him in the briefest and most concise way. But what I have said will probably be sufficient to show the thoroughness with which he has comprehended and stated the Kantian position and its relation to modern difficulties.

EDWARD CAIRD.

The Relations of Mind and Brain. By HENRY CALDERWOOD, LL.D., Professor of Moral Philosophy, University of Edinburgh. London : Macmillan, 1879. Pp. 455.

The position taken up in this work is exactly that described by Professor Bain in the following passage from the first chapter of his *Mind and Body*, as one of the ways in which their connexion may be viewed :—"There might be certain mental functions of a lower kind partially dependent on the material organisation, while the highest functions might be of a purely spiritual nature, in no way governed by physical conditions. For receiving impressions, in the first instance, we need the external senses ; we are dependent on the constitution and working of the eye, the ear, the organ of touch, and so on ; yet the deeper processes, named memory, reason, imagination, may be pure spirit, beyond and apart from all material processes."

After an opening chapter on "The Relations of Philosophy and Science," in which the necessity is shown of both to a true understanding of human life, we have a chapter on "The Structure of the Brain," giving a careful anatomical description, illustrated by plates, of the contents of the encephalon, but with a decided pre-eminence given to the cerebrum. Next follows Chapter 3 on "The Nerve System as dependent on the great Nerve Centre," treating of the

remainder of the nervous system and its peripheral connexions with the skin and muscles. The law that "frequency of use gives increased conductivity," is adverted to in reference, first, to sensory and, secondly, to motor fibres. This chapter ends with a statement of the leading facts respecting the nerves and organs of the three special senses of smell, sight and hearing, which the author takes as specimens of the sensory system generally.

Chapter 4, on "Localisation of Functions in distinct portions of the Cerebrum," is an important one in relation to the author's line of argument. Considerable space is devoted to an enunciation of the results of Dr. Ferrier's experiments on the brains of the monkey and the dog. The negative results of attempted stimulation of the frontal and posterior lobes of the cerebrum rather perplex the author, who is evidently desirous of making out the cerebrum to be a purely sensori-motor organ, but he endeavours to evade the difficulty by referring to the fact that the sensory centres are only distinguished as such by movements, and surmising that the "silent regions" are concerned in "forms of sensibility which are experienced with little movement of any part of the body". Still this, he admits, does not explain the silence of the frontal region, which he endeavours to account for by the supposition that "the governing power of the brain as a whole, involving the co-ordinated and regulated use of all its functions," comes from that region, and that electric stimulation is incapable of exercising this governing power. The difficulty here seems to be created by the author's method of ascertaining the nature of the connexion between mind and brain. He is trying to prove, as one branch of his argument, that the anatomical and physiological investigation reveal only *sensation* and motion as the functions of the brain. But, from the physiological side, it is only *motion* in response to physical impression that is or can be observed; and the same arguments by which we are led to infer the existence of sensation in other organisms prove ideation and emotion as well.

Chapter 5 institutes an elaborate "Comparison of the Structure and Functions of Brain in lower and higher forms of animal life," with the results (stated in chapter 6) "that the brains most elaborate in convolution are associated with the most highly developed muscular system," and "that more intricate arrangement and subdivision of the brain is connected with more detailed arrangement of the muscular system in contrast with mere mass of muscle."

Chapter 6 contains a summary of the "Results of Anatomical and Physiological Investigations," as described in the previous chapters. The author commences by insisting on the homogeneity of the nervous structure throughout the cerebro-spinal centres, denying that variety of arrangement implies diversity of function—a denial which reminds us of the different view of Mr. Lewes, who from identity of substance inferred identity of property, but added diversity of function as a result of diversity of arrangement. Professor Calderwood has not attended to the distinction between function and property.

After pointing out the similarity of arrangement between the sen-

sory and motor apparatus, he proceeds to analyse sensory action into four stages, *viz.* :—(1) the excitation at the peripheral extremity, (2) the movement along the nerve fibre, (3) the molecular action of the central cell, and (4) the sensation as “a result of the action of the sensory apparatus.” Motor action is similarly analysed into (1) movement within the motor cell, (2) discharge of nervous energy, (3) muscular contraction, and (4) movement of the limb. The author here raises the contention, more fully argued in a following chapter, that in voluntary action some other origination of motor activity than the action of sensory cells must be looked for, and that it is to be found in the direct action of the will on the motor cells; but admits that the mode of its action is unknown. He also promises to consider in another chapter “whether the movement within a sensory cell and the experience known as a sensation are to be identified or regarded as distinct,” but does not seem to fulfil his promise. The chapter concludes with the statement “that anatomical and physiological investigations as to brain and nerve, so far as they have yet been carried, afford no explanation of our most ordinary intellectual exercises.”

The question of the connexion between sensation and the activity of sensory centres and between volition and the activity of motor centres, comes into prominence in the two following chapters, 7 and 8, under the titles of “Personal Experience as connected with Sensation” and “Personal Experience as connected with Motor Activity.”

In the first of these two chapters the author commences by dwelling on the power of discrimination between two or more sensations as evidence of a discriminating Intelligence apart from the sensations. With this view he brings forward the conclusion come to in the preceding pages, that the function of the cerebrum is limited to producing sensations and effecting movements. He rejects “the hypothesis that the grey matter of the brain does intellectual work, while the grey matter of the spinal cord does not; or that the cellular tissue of the frontal lobe in the cerebrum can be credited with power of discrimination which does not belong to the grey matter of the occipital lobe.” On this point we are disposed to go some distance with the author, not, however, by “levelling down” the cerebrum, but by “levelling up” the spinal cord.

In chapter 8, the facts of voluntary activity are dwelt upon as evidence of the existence of a Will distinct from the motor apparatus. Referring to the “voluntary endurance of pain in any form without shrinking,” as an example of the purely voluntary element, Professor Calderwood says, “there is no law applicable to the sensory and motor apparatus which implies the imposition of a check on the transmission of the impulse communicated at the peripheral extremity of the sensory nerve when an incision is made. Spontaneous shrinking is the one inevitable result under the laws of nerve action.” Here the author must be confronted with the notorious fact (to which he barely alludes, as if it were of no consequence) that the action of any of the nerve centres may be “inhibited” by the action of other higher centres. A man if he could live with his cerebrum removed would doubtless in-

evitably respond to an incision by muscular action more or less violent, but the cerebrum left intact is capable of inhibiting the action of the lower centres in a manner that may be understood, even with our present imperfect knowledge of the relation of its parts.

Supposing the functions of the cerebrum were merely sensori-motor, Dr. Calderwood's conclusions in these two chapters would still not follow. It may be contended that all our mental life is made up of sensations, ideas, and emotions, and the relations between them; that ideas are merely fainter forms of sensations, and emotions compounds of ideas and organic sensations; that the relations of sequence, co-existence, and similarity, are further conscious states arising out of the juxtaposition of the others; and that volitions are simply compounds of idea and emotion resulting in action. In this way all the varieties of our mental life might be traced to different combinations of the activities of a sensori-motor apparatus. However, the mode of combination is much more intelligible on the hypothesis of the cerebrum being set apart for the work of combination.

Still more questionable is the way that Professor Calderwood deals with the general question of the relation of mind to matter. He speaks of the action of mind on matter as one would speak of the action of the wind on the waves. He admits, indeed, that the mode in which "the Will exercises this control over the cells, fibres, and muscular tissue, is unknown, but that such control is exercised," he says, "admits of no doubt." Now there is of course a sense in which it is true that the Will exercises control over certain "cells, fibres, and muscular tissues;" but all depends upon what the author means. Fortunately we are left in no doubt about this, for he tells us that "volition is not that which moves the muscles, but that which moves the nerve cells to act upon the muscles." Again, "what is not reflex as not being the product of movement of the sensory nerve, must be accounted for by energy from some other quarter, that is, from a sphere external to the nerve system, though within the nature of the person." These two passages taken along with other passages already quoted from the same chapter show clearly that the author regards mind as an entirely distinct substance from the body or any part of it. But in this sense the proposition that Will (which is a state of mind) exercises control over any "cells, fibres, and muscular tissue," whatever, admits of more than doubt. Some thinkers there certainly are who cannot see that mind acts on body in any sense whatever. That the wave of molecular motion along a sensory nerve should end in something which is not motion, or that the wave of molecular motion proceeding from a motor centre should originate from something which is not motion, is to them inconceivable. Thus Professor Bain says in his *Mind and Body* (p. 131):—"It would be incompatible with everything we know of the cerebral action, to suppose that the physical chain ends abruptly in a physical void, occupied by an immaterial substance; which immaterial substance, after working alone, imparts its results to the other edge of the physical break, and determines the

active response—two shores of the material, with an intervening ocean of the immaterial. There is, in fact, no rupture of nervous continuity." In expounding his own view, Professor Calderwood might have been expected to reckon somewhat more particularly with the counter-position that has been thus explicitly set forth.

In chapter 9 the author takes into consideration the facts concerned in Retentiveness, endeavouring to limit the function of the cerebrum to the retentiveness of muscular acquisitions. It is only necessary, however, to mention the instances, well known to every psychological student, in which cerebral disease has occasioned the resuscitation of such purely mental acquisitions as sentences in unknown or normally forgotten languages, to prove that such an endeavour cannot be successful. The author tries to find support for his attempted limitation by an analysis of Professor Bain's calculations as to the number of cells and fibres in the brain, and the number of intellectual acquisitions, with a view to showing that there are not enough of the former to find room for the latter.

Passing over chapter 10, on the "Use of Speech," and chapter 11, on the "Action and Reaction of Body and Mind," we come to chapter 12, on "Weariness, Sleep, and Unconsciousness". Here the author endeavours not very successfully to reconcile the facts coming under this head with his theory. He makes the most he can of the fallibility of memory in order to rebut the presumption of unconsciousness in the instances usually appealed to as proofs of the dependence of consciousness on material conditions.

Chapter 13, on "Brain Disorders," deals with the phenomena of idiocy and insanity. The author tries to make out that the intellectual abnormality of insanity lies not in the processes of thought, but in the materials and bases of thought presented through the senses, or, in other words, that the insane man reasons as correctly from the evidence of his senses as the sane man—all the fault lying with the senses. The facts seem to us rather to justify the opposite conclusion. It is, however, with regard to moral insanity that the author's position is the most inadmissible; for he characterises the abnormal moral tendencies of the insane as "animal propensities," which organic disease prevents the will from counteracting by its "governing power" and "moral forces". Without stopping to inquire how organic disease of the material organ could interfere with the action of the immaterial organist, we must protest against this relegation of all evil tendencies to the animal body, and all beneficial ones to the higher mind, as not only arbitrary but unphilosophical. To the psychologist, "appetites" or "propensities" are feelings, and therefore states of *mind*, irrespective of their objects or tendency.

The only point of importance in chapter 14, on "The Higher Forms of Mental Activity," is a challenge to "the somatist who would bring all human conduct within the scope of organic action," to account for "the recognition of duty," or the moral nature of man. There might not be much difficulty in meeting this challenge, provided a number of organisms be allowed, the interaction of which creates moral relations.

Apart from society morality cannot be explained on any theory ; and the "recognition of duty," it may be urged, is only ordinary intelligence exercised on social relations. The problem then resolves itself into the question of the material basis of intelligence generally.

A "Short Summary of Intellectual Results," in chapter 15, closes the work.

JNO. T. LINGARD.

L'Idée moderne du Droit en Allemagne, en Angleterre et en France.

Par ALFRED FOUILLÉE, Maître de Conférences à l'École Normale Supérieure. Paris : Hachette, 1878. Pp. 364.

The scheme of M. Fouillée's work is original and striking, and the execution of it has a well-sustained interest. No student of ethics will regret the time spent in reading these succinct and lively chapters; though I imagine that few Englishmen, at the present day, are likely to place a high value on the positive results of M. Fouillée's critical reflection. He considers that each of the three leading nations of Europe, Germany, England, and France, has a different school of ethico-political thought, and that each of these schools lays a different general idea at the basis of its theoretical construction of social order. The fundamental notion of the German School is Force; that of the English school, Interest; while for the French school—as the reader easily divines—is reserved the defence of Right. The practice of the three nations is in thorough accordance with their theories. That German policy puts Might in the place of Right, is a proposition which for a French public does not require much proof: England's habit of attending solely to "British interests" is avowed and notorious; whereas, as M. Fouillée informs us, the "vraie tradition de la France" is a "préoccupation de la justice pour tous, souvent poussée jusqu'à l'oubli de soi-même et de ses intérêts légitimes. France, in short, is a martyr to her ideal of Right; and, though crushed by the superior force of Germany, she is as content as Cato with the grandeur of her conquered cause, and unshaken in her belief in its ultimate triumph.

No English reader will grudge M. Fouillée this moral consolation for the material defeat of his country; especially since, from the summit of his ethical superiority, he makes an effort to look down as sympathetically as possible on the inferior social ideals of the two neighbour nations. He tries to represent the fundamental view of the "École Allemande" and the "École Anglaise" in the fairest possible light, and to see what either will come to when developed under the most favourable conditions; then, having pointed out the inadequacy of either even when so developed, he shows how both conceptions may be reconciled with, and find a certain place in, the higher ideal of the French school. Nor is his criticism in either case devoid of insight. For instance, there is much truth in his account of the process by which the modern German mind has passed from "mysticism" to "naturalism" through what he calls "symbolism"

—a not very felicitous term for the tendency of German metaphysicians to find in the sensible world a manifestation of the intelligible, and in the historic development of society a manifestation of reason. At the same time it can hardly be necessary for me to argue seriously against M. Fouillée's conception of German social philosophy. By skilfully combining the optimism of Hegel, the pessimism of Schopenhauer and Hartmann, the naturalism of the Darwinian school, and the diplomacy of Bismarck, it becomes possible to represent the simple formula "la force prime le droit" as the finally accepted expression in Germany of the "identité cherchée entre le rationnel et le réel"; but the composition of these heterogeneous and conflicting elements into the doctrine of an "École Allemande" gives us a mere chimera, calculated to serve no purpose but that of gratifying the patriotic spite of French readers. No doubt it is characteristic of the historical method which prevails among German thinkers to reject the "natural and imprescriptible rights" of the individual; to which, as M. Fouillée tells us, the French school still adheres. But it does not follow that Germans overlook or underrate the importance of moral ideas in social development. In subordinating the claims of the individual to the changing needs of the nation, they, generally speaking, conceive the nation not as a mere complex of non-moral forces, but as a moral being, destined to realise "Sittliche Ideen" and to solve "Cultur-Aufgaben" for itself and for humanity. Indeed, M. Fouillée himself seems to recognise this in a passage in which, as a Frenchman, he scorns the idea of being moralised by Germany. We can quite sympathise with this outburst of national feeling; we all find the Teuton's assumption of ethical and æsthetic superiority far from gratifying to our national *amour propre*; but the mere fact that this assumption is so largely and offensively made is hardly reconcileable with M. Fouillée's view of the non-moral doctrine of the "École Allemande".

We need not, then, examine M. Fouillée's argument to prove (Pt. I., c. 3) that a nation which makes Force its ultimate aim commits a mechanical error in suppressing the individual, since the greatest intensity, variety, and stability of social forces results from the minimum of constraint equally distributed: or his demonstration that a "civilisation fondée exclusivement sur le jeu fatal des Forces" carries within it a dangerous principle of self-dissolution leading to a war of egoisms, individual or tribal. The arguments are not in themselves ineffective; but as M. Fouillée introduces them, they are chiefly remarkable for their irrelevance.

In dealing with the Interest-Philosophy of the English school, M. Fouillée is on much safer ground; and his appreciation of leading English utilitarians is intelligent and sympathetic. It is true that in one passage he confounds with his fundamental antithesis of Interest and Right that other antithesis between Traditional Right and Abstract Right, in which the English and French minds are apt to take opposite sides; and he makes the curious mistake of attributing Sir H. Maine's "aversion pour les droits naturels" to a "préoccupation

exclusive de l'utile"; and generally fails to see that the opposition among English jurists of the present day to the "Law of Nature" is due rather to their clear separation between law as it is and has been and law as it ought to be, and their adoption of the historical method in studying the former, than to their adoption of the utilitarian method in determining the latter. Again, it is not always easy to make out whether the "principe d'intérêt" which M. Fouillée is criticising is conceived by him as "regard for happiness" or as "regard for one's own happiness": but perhaps he is hardly to be blamed for this, as the same want of clearness is found in most English discussions of utilitarianism. Indeed in the earliest and most ardent days of Bentham's school, its members, though united in their attachment to the "Greatest-Happiness Principle," seem to have had some difficulty in agreeing as to what that principle exactly was. M. Fouillée generally understands by it the combined propositions (1) that the general happiness is the proper end of social construction, and (2) that it can be and ought to be attained by an "habile fusion" of individual interests. He describes appreciatively the plan of social construction which English utilitarians have developed on this basis; explaining how "de Bentham à Stuart Mill, de Stuart Mill à M. Spencer, nous voyons la philosophie de l'intérêt, emportée par un mouvement irrésistible, se former peu à peu un idéal de liberté et d'égalité analogue, au moins par l'extérieur, à l'idéal dont la philosophie du droit propose la réalisation aux jurisconsultes et aux politiques." But he endeavours to show, by arguments for the most part familiar to English readers, that this "idéal de la société utilitaire" is not "réalisable par le seul jeu des intérêts"; and then proceeds to urge that if it could be completely realised, it would still leave our higher aspirations unsatisfied.

"Représentons-nous l'humanité entièrement absorbée par la recherche des jouissances et entièrement satisfaite dans cette recherche même, réalisant ainsi en sa plénitude tout ce que peut contenir l'idée de l'utile, et trouvant enfin la paix dans l'équilibre des intérêts réconciliés. On nous dit que nous sommes alors en présence de 'l'humanité définitive,' qui ne fait plus qu'un avec la nature entière, et que le règne du droit est réalisé; mais c'est en vain qu'on veut arrêter l'essor de nos désirs: nous pouvons toujours dépasser cette humanité par la pensée, et la nature même demeure toujours inférieure à notre propre conscience. Dans la cité parfaite des utilitaires sommes-nous libres? Non, nous n'avons qu'une liberté extérieure qui ne nous donne pas la conscience de notre dignité intime. Sommes nous égaux? Non, l'égalité matérielle des 'parts de jouissances' dans la répartition sociale ne remplace point l'égalité de droit et de respect entre les personnes. Sommes nous frères? Non, nous pouvons agir comme si nous nous aimions; nous ne pouvons nous aimer: l'être soumis à de lois fatales, n'ayant pas de volonté à lui, ne saurait avoir de bienveillance pour les autres; n'ayant point la possession de soi, il ne peut faire le don de soi."

The last sentences of this passage indicate the cardinal point of M. Fouilléé's own doctrine; which is more fully developed in the concluding and larger portion of his work, where the French idea of Right

is expounded and criticised. This portion begins with a rather patriotic description of the "historical vocation" of the French mind—with its "élan spontané de la volonté" towards "les idées générales et universelles"—for the establishment of the reign of Right and Justice; followed by a brief, and in some points superficial, account of the origin of the idea of Right in French philosophy, under the diverse influences of Stoicism, Christianity, and English Sensationalism, and its development in the nineteenth century. Having, in the course of this account, shown that it is "une doctrine devenue aujourd'hui classique en France que de faire reposer le droit sur la liberté morale," M. Fouillée proceeds to criticise the traditional ideas of Right and Moral Liberty. He urges forcibly that the Moral Liberty which confers on each individual man his inalienable claim to the respect of his fellow-men cannot be the mere power of choosing without motives or against the strongest motive. Such a power—supposing it proved that we possess it,—can obviously give no title to respect. Those who maintain the opposite have to face an inevitable dilemma. Either this "liberté d'indifférence" is in itself absolute good, in which case all freely chosen acts must equally have the quality of good, and moral and jural restraints disappear; or it is only good so far as it conforms to a certain law, in which case it is on this law that we ought to base our system of Right, and not on the mere power of choosing between alternatives. What, then, is the true idea of Moral Liberty? M. Fouillée expounds it in the following terms:—

"Le mot de liberté . . . dans son sens positif, exprime la présence d'une force agissant par soi, l'activité spontanée et consciente, la volonté ; la liberté doit donc se définir la volonté indépendante ou qui ne dépend que de soi. Reste à savoir en quoi consiste cette indépendance . . . c'est l'indépendance par rapport aux motifs inférieurs et extérieurs, aux motifs égoïstes et matériels, car ces motifs expriment non la direction normale et essentielle de la volonté raisonnable, mais la déviation que les fatalités du dehors lui font subir ; ils sont donc les servitudes. Dès lors la vraie liberté, si elle existe, ne consiste pas à pouvoir mal faire, mais à pouvoir bien faire . . . le premier de ces pouvoirs n'est pas nécessairement la condition du second . . . car il se peut que le mal soit le résultat des contraintes extérieures, tandis que le bien serait le dégagement de notre propre activité, de notre vraie nature intelligente et aimante."

He does not maintain that liberty in this sense actually exists, but that it at any rate is an ideal which it essentially belongs to man to frame, and which is an actually important factor in social evolution, from the force which, as an idea existing in men's minds, it exercises towards its own—at least approximate—realisation. He holds, however, that we cannot say that liberty in this sense does not exist; for there is a mystery in man unsolved by science, and "ce mystère . . . est le fondement métaphysique du droit."

A notion which, as M. Fouillée admits, the whole course of science tends to show to be imaginary, seems rather a fragile basis for social order. But, passing over this point, I fail to see how the acceptance of this idea of liberty would manifestly lead to the realisation of

"liberté extérieure" as ordinarily understood in free communities. If true freedom is not the power of doing what one may happen to like, but the power of doing good, it is a kind of freedom on which the most despotic theorist has never wished to place restraints. Despotism, in civilised ages, has always justified itself on the ground that if you let men do what they like, they will, instead of "developing their true, intelligent, and loving nature," fall under the dominion of "inferior and egoistic motives". All would admit that, in M. Fouillée's words, "le bien volontaire est supérieur aux autres,—parcequ'il est seul conscient, senti, aimé;" the question still remains whether we shall actually realise it by leaving men free to do what they like. I do not see that M. Fouillée ever fills up this gap between the liberty he shows ground for respecting and the liberty that he practically aims at securing. I do not see, for instance, why the "true liberty" should require equal distribution of property as a "garantie extérieure"—one may exhibit rational benevolence with only the widow's mite, or why it should require "conditions identiques d'admissibilité aux fonctions," or any of the other points of a republican's creed.

I can only just notice M. Fouillée's concluding book, in which the idea of Equality is discussed. He appears to me to treat the problem of reconciling Liberty and Equality far too lightly, as though he were hardly conscious of the continually widening chasm between the two ideals, which the controversy between socialists or quasi-socialists and the partisans of "laissez-faire" has recently made so prominent. I must not, however, forget to say that this last book includes a lively and effective criticism of M. Renan's aristocratic paradoxes.

HENRY SIDGWICK.

Reine Logik. Von Dr. J. BERGMANN, ord. Prof. der Philosophie an der Universität zu Marburg. Berlin : Mittler, 1879. Pp. 434.

The primary division of the field of Logic into 'Pure' and 'Applied' rests, according to Prof. Bergmann, on the distinction between the immediate and the mediate aim of thought, the immediate aim being Thinking itself, the mediate aim Knowing : under Pure Logic, thought is regarded as *ἐνέργεια*, under Applied Logic, as *κίνησις*. Logic in general is the Theory of the Art of Thinking ('thinking' being equivalent to 'judging'), the Science of the normal constitution of Thought. Pure Logic accordingly "treats of the normal forms of the Judgment, Applied Logic of the normal forms of the application of these to the perfecting of Knowledge Pure Logic shows, as it were, the mechanism of thinking in a state of rest, Applied Logic shows it in a state of activity ; or, to use another metaphor, the former is the Anatomy, the latter the Physiology, of Thought as it ought to be Pure Logic may be called the theory of Thinking as Thinking, Applied Logic that of Thinking as Knowing."

The Judgment is, then, treated as the centre round which the

Science of Logic may best be grouped ; the normal forms of the Judgment, as far as possible away from their application to the search for knowledge, being the subject of the present work. Professor Bergmann divides the doctrine of Judgment into two main parts : (I) The Import of Judgments, and (II) The Truth of Judgments. In the first part, after a careful and intricate preliminary discussion of the nature of judgments and of the processes supplementary to their formation, Prof. Bergmann's views are further developed by a consideration of the subject under three heads :—(1) *Die Anschauung*, as foundation of the Judgment ; (2) *Die Vorstellung*, as constituent part of the Judgment ; and (3) The Judgment as verdict on the value of a *Vorstellung*. Part II. comprises (1) Material Truth,—being chiefly a discussion of what "correctness" means, as applied to *Vorstellungen*, and an examination, with a new wording, of the Axioms of Consistency ; and (2) Formal Truth,—being a full treatment of the doctrines of immediate inference and syllogism.

The most noticeable feature of the work (apart from its metaphysics) is the view taken of the nature of predication : of the relation between Conception¹ and Judgment on the one hand, Conception and Intuition on the other : especially the elaboration of a difference between Judgment and the "mere quality-less and modality-less predicating" which Professor Bergmann gives as a definition of *Vorstellung*.

Stated shortly, Prof. Bergmann's view is as follows :—The processes supplementary to the formation of a judgment are three : *Anschauung*, a Synthesis ; *Vorstellung*, an Analysis ; and finally a Criticism,—a verdict as to whether the synthesis completed in the Intuition and analysed in the Conception, is valid or not. The Conception is a reflection on the Intuition (*i.e.*, on the products of Intuition), and the Conception, combined with a verdict on its validity, is a Judgment.

The Intuition, then, is the root of both the Conception and the Judgment.² It is the positing of things as possessing attributes. This act it is which calls 'things' into existence : material objects, as such, are not the raw material on which Intuition works, but by Intuition we imprint the form of 'thinghood' on the raw material,

¹ I think it will be best to translate *Vorstellung* by 'conception' throughout, in spite of predication being made its distinguishing feature, and in spite of the fact that Kant appears occasionally (*e.g.*, *Log.*, Rosenk. III., p. 282) to use *Vorstellung* for that which is here called *Anschauung*, while Drobisch (*Log.*, 3rd ed., § 40) uses *Begriff* for the same purpose. Prof. Bergmann's account of his own distinction between *Vorstellung* and *Begriff* is, that he uses the former word both for the momentary and the permanent product of *Vorstellen*, and that *Begriff*—the sum of one's stored-up knowledge (*Wissen*) about an object—includes the permanent *Vorstellung* just as the Judgment includes the momentary one. The *Begriff* is a *Vorstellung* (in the permanent sense), when critically elaborated.

² Prof. Bergmann leaves it rather doubtful, however, to what extent he considers the Intuition to be 'contained' in the Conception, and therefore in the Judgment.

whatever it may be. Thinghood, Substantiality, Existence, are synonymous terms. The products of Intuition are objects, and every object is a possible S of a 'Conception,' and possible predicates belong to it.

Conceptions, beside their division into individual and general, are, like Judgments, divisible into existential and attributive. Every Conception contains a predication, has a Subject and a Predicate (*Das Sein* being of course predicated in existential, *Das P-Sein* in attributive conceptions). And attributive conceptions may¹—like attributive judgments—be viewed as the binding together of two existential conceptions. To conceive is to reflect on the products of our Intuition, to set them up as (individual) objects, to notice them and their attributes, to analyse the synthesis by means of which the objects were formed from the raw material.

Judgment is "opposed, not to Conception in general, but to *mere* Conception". It is Conception with something added to it. This something which, when added to Conception, raises it to the dignity of Judgment, is an element to which great importance is given by Prof. Bergmann, who complains that it has been rather overlooked by other writers. Even when some definite attribute is predicated of some thing, there is according to Prof. Bergmann, nothing more than a conception. When, however, we cease to be content with mere predication, and begin to criticise,—to give a verdict on the correctness of our predication—a judgment emerges. In the Judgment, there is always "combined with the mere apprehension (*Auffassung*) of an object as existing simply or as possessing such and such attributes, a critical reflection on the validity of such apprehension, a verdict on its correctness, a confirmation of it or a rejection". This reflective attitude is what, in his view, constitutes the difference between Conception and Judgment.

It is clear that Prof. Bergmann's doctrine may be attacked either from the side of the Judgment or from that of the Conception. On the one hand the question may be raised whether this *Auffassung* is not to all intents and purposes Judgment,—in which case it may be objected that 'Judgment' as here defined becomes a superfluity, a mere reduplication; on the other hand the question may be raised whether the 'critical attitude' is in reality anything more than *intelligent* predication,—in which case it may be objected that 'Conception' as here defined becomes equally unnecessary, being simply a name for semi-intelligent Judgment, judgment not fully conscious of its own real meaning. Where, it might be asked, is any line to be drawn between critical and uncritical apprehension of a thing as possessing attributes?

It is not exactly clear whether Prof. Bergmann would himself consider the novelty to reside in his 'Judgment' or in his 'Conception'. In some passages he seems to imply that logicians have rather neglected the reflective, or critical, element in the Judgment; in others, that

¹ Prof. Bergmann objects, however, to this view as the fundamental explanation of the Judgment, as a case of *ὑστερον πρότερον*.

the assertive element in the Conception has been in general overlooked. On the whole, however, I incline to the view that he makes of Conception something practically indistinguishable from Judgment; and if so, of course 'Judgment' as defined by him is only distinguishable from 'Conception' as being a Judgment about a judgment, instead of a Judgment directly about things.

Two considerations will chiefly serve to support this opinion. Ueberweg, whom Prof. Bergmann quotes as holding a view nearest to his own, defines Judgment (*Log.*, 4th ed., p. 154) as "the consciousness of the objective validity of a subjective combination of conceptions . . . i.e., the conscious answering of the question whether between the corresponding objective elements the analogous combination exists": but Prof. Bergmann says, between this view and his own, lies the essential difference that, while Ueberweg seems to consider that the reference to the objective bearings of the case first comes into existence in the Judgment, his own view is that this already takes place in the Conception—that the apprehension, the objective validity of which is pronounced upon in the Judgment (which apprehension he gives, we have seen, as the definition of the Conception) is already "eine objektiv oder besser objectivirende".

In what respect, then does this *objectivirende Auffassung* differ from Judgment? Because, says Prof. Bergmann, it stops short at "mere predication," without explaining either negation or modality. This appears, in fact, to be the key to the whole position. If mere predication—the argument runs—could constitute a negative¹ judgment, then negation must belong to the predicate, and negativity be a quality of the things spoken of: but negative predicates, in this sense, are 'unthinkable'; therefore negative judgments cannot be explained by mere predication; and if not negative judgments, then neither can affirmative ones,—for affirmation and negation are completely complementary and mutually explaining.

One cannot help asking, If affirmation implies a correlative negation—as of course it does—what is the meaning of "quality-less predication"? Is such predication possible, except so far as the person predicating can manage to predicate loosely and unintelligently enough to remain blind to the real meaning of his predication? And further, Does not Prof. Bergmann's own statement of the doctrine of incompatible attributes (§ 23) practically amount to a full acceptance of negative predicates, and a perfectly correct explanation of the manner in which they are possible and the meaning which they really bear? In fact, Prof. Bergmann's views on the subject of negation appear always (until at least incompatible attributes are being treated) rather liable to confusion. One of the difficulties, for instance, raised to the possibility of negative predicates is that their supposition demands a negative-negative predicate, and so on *in infinitum*: but one does not

¹ The differences in modality,—following Kant's distinctions of apodeictic, assertory and problematic,—are found, by an essentially similar process, to lead to the same result.

see why any one so ready as Prof. Bergmann¹ to attend to the spirit and to disregard the letter, should hesitate to cancel every *pair* of negatives as mutually destructive and a mere wordy encumbrance. What, for instance, could the predicate 'not-not-white' mean, except simply white; or the predicate 'not-not-not-white', except some attribute of which the only thing known is that it is incompatible with white? Again, the statement (§ 6, 5) that "we only know invalidity, incorrectness, falsity, through reflection on our negative judgments," seems rather to conflict with his main view that a negative judgment cannot arise until by reflection we find a conception invalid (incorrect).

The second consideration which may be mentioned in support of the view here taken of Prof. Bergmann's doctrine, is the meaning of "validity" (or "correctness"—for the terms are used synonymously throughout) as applied to the *Vorstellung*. Prof. Bergmann naturally devotes a rather large space to this question, and the discussion is full of instructive suggestions.

The quality of correctness-incorrectness is, of course, said to be something different from that of truth-untruth. "True" is applicable to the Judgment only, not to the Conception or the Intuition. The conception contained in a true judgment may be incorrect, and that contained in an untrue judgment may be correct.

Next, the correctness or incorrectness does not refer to the analysis, as such, which takes place in the conception, but the correctness or incorrectness of the synthesis constituting the *intuition* is that which validates or invalidates the conception. [Why not, then, simply speak of the correctness-incorrectness of the intuition; especially as it was expressly said (§ 6, 8) that conception is the reflection on the intuition, not the latter *combined with* the reflection on it?]

Now a conception is to be called correct when it agrees with that which is, with the actual state of the case. This occurs:—

In a singular existential conception, when its S exists (when the Universe includes that S);

in a general existential conception, when the Universe includes two or more objects belonging to its compass;

in a singular attributive conception, when the S possesses (includes) the attribute P. The correctness of a singular attributive conception presupposes that of the corresponding existential conception.

in a general attributive conception, when the whole number of objects belonging to its compass include the attribute P.

The correctness of a general attributive conception also presupposes that of the corresponding existential.

It is evident, then, that the "correctness of a conception" requires

¹ As witness the translations of the grammatical S into the logical one, or of the propositions where the same word figures for S and P; or the list of names considered Abstract; or again, the fact that he avoids the mistake (fallen into by Prof. Jevons) of supposing that a valid conclusion could ever really be obtained from two negative premisses.

the "truth of a judgment" to explain it, just as much as the latter requires the former: whenever, and only when, we have ground for knowing a "conception" to be correct, we have ground for knowing the corresponding judgment to be true; and whenever, and only when, we have ground for knowing a judgment to be true, we have ground for knowing the corresponding "conception" to be correct.

Further, the agreement of a conception with the actual state of the case is always the "agreement of a conception with itself". Accordingly, correctness of a conception may be defined simply as Identity, incorrectness as Contradiction: and the Principle of Identity may be stated "Every correct conception is identical"; the Principle of Contradiction "Every incorrect conception contradicts itself"; the Principle of Excluded Middle becomes "Every conception is either correct or incorrect"; and a Principle of (Sufficient) Reason is added, based on the fact that we have no *absolute* proof of "agreement of a conception with the actual state of the case," and can therefore, in this sense, only give it hypothetical certainty, guaranteeing it by means of some other already accepted as correct. We attain, in fact, (to use Kant's distinction) 'empirical' not 'transcendental' correctness. The Principle accordingly runs: "A conception is correct when it has a correct *Grund* (If A is B, C is D; now *A is B*) or an incorrect *Gegenfolge* (If C is not D, A is B; now *A is not B*): and incorrect when it has a correct *Gegengrund* (If A is B, C is not D; now *A is B*) or an incorrect *Folge* (If C is D, A is B; now *A is not B*.)

Here again "correct conception" and "true judgment" are surely indistinguishable. On the whole, the boundary between 'conception' as here used, and 'judgment' as ordinarily understood, seems to be imaginary, and the difficulty of distinguishing them in practice to be rather increased than diminished by Prof. Bergmann's manner of defining them. "Quality-less and modality-less predication" is in fact a contradiction in terms, and it is only by forgetting these epithets, putting a real predication into the conception, and thereby confusing it with judgment, that Prof. Bergmann is able to proceed. Why not abide by the simpler explanation that in the Conception a fact is left unquestioned, and therefore unanswered, which in the Judgment is both questioned and answered?

I think it clear too, that the imaginary distinction between this *Vorstellung* and Judgment is really traceable to the difficulty unnecessarily—and, as above shown, not even consistently—raised, about the meaning of negation. A further instance of the uncertainty of Prof. Bergmann's views on the subject of negation, is the distinction (considered by him as at least *supposable*) between "nicht richtig" and "unrichtig" (§ 21, 5.). This is done, of course, in order to put a "heterological" meaning into his Axiom of Excluded Middle, but it rests on exactly the same illusion as led certain metaphysicians to suppose an object simply divested of all its attributes, one by one. Besides, is not the attempt to turn the Axioms into heterological judgments based on a misconception of their real value, such as it is?

Is it not sufficient justification for a truism, that it is expressed in order to prevent people from being inconsistent?

The remaining portion of the book is occupied with Immediate Inference and Syllogism. Prof. Bergmann attempts perhaps to draw a firmer line than is possible between these two kinds of "Inference"; but the doctrines themselves appear to be carefully set out, and the use made of the Principle of Reason is worthy of attention: Syllogism, according to his view, rests upon this, while Immediate Inference does not.

As a whole, the book contains much that is interesting and useful. One notices a constant care (though, as I have shown in the case of the origin of negative judgments, not always successful) to avoid the error, so common amongst writers on Logic, of circular explanation; and a remarkable freedom from the equally common error of supposing a sharper division to exist between certain pairs of opposed notions than actually does exist: as instances of this, may be mentioned the remarks about the opposition of Formal and Material, of "is" and "ought to be," of Realism and Idealism. The general consistency, too, of Prof. Bergmann's views, is considerable—the stretching of principles to their legitimate consequences and beyond the results to which people are commonly content to apply them.

In many minor points, not directly connected with the main view, Prof. Bergmann seems to hold the latest and the coming views: careful attention has been paid by him to the opinions of the best modern writers in Germany. It is unavoidable, of course, that a considerable space—especially of the earlier portion of the work—should be occupied with Psychology and Metaphysics. It was necessary to expound the fundamental convictions out of which, as Prof. Bergmann says, his theory has been developed; and readers will not be disposed to quarrel with this, or in fact with many of the separate discussions themselves.

As to the main division of the science, no doubt it will not bear much pressure, and the attempt to preserve it quite consistently must always lead a writer into difficulties: still, its convenience is a sufficient justification. Readers of this first volume of Prof. Bergmann's *Allgemeine Logik* will look with interest for the publication of the second volume; and those who have failed to fully comprehend any of his views as at present stated, will have another opportunity of doing so, when the exact results of these in the *Angewandte Logik* shall become more evident.

ALFRED SIDGWICK.

Immanuel Kant's Erkenntnisstheorie nach ihren Grundprincipien analysirt. Ein Beitrag zur Grundlegung der Erkenntnisstheorie. Von JOHANNES VOLKELT. Leipzig: Voss, 1879. Pp. viii., 274.

Herr Volkelt has a quarrel with all other expositors of Kant. They appear to him to have set to work in their labours under the delusive idea that in the Critical Philosophy there must be found, and is found,

a certain unity of principle, whatever that principle may be. His analysis, however, has convinced him that the Kantian system is really a very complex product, exhibiting the consequences of more than one principle, the full import of which was never clearly apprehended by its author. He claims, then, "to understand Kant better than Kant understood himself," and to be able to bring to light the fundamentally opposed principles upon which Kant, with only half-consciousness, proceeded in his work of construction, and out of which there naturally emerged a theory of knowledge throughout full of weakness, error and contradiction.

The fundamental theorems which Volkelt regards as the unconscious motives dominating Kant's thought, are two in number; the one stated with some explicitness by Kant, though its full bearing and consequences were never realised by him; the other only to be detected by showing that it is the basis on which some of his characteristic doctrines rest. The first, which to Volkelt is absolutely the primary proposition of philosophy in general, is called the Positivist principle, or principle of completed scepticism. It is the proposition, familiar enough, that experience consists of conscious states, *Vorstellungen*, and that cognition is only of *Vorstellungen*. Now, beyond question, Kant does express a principle in words resembling the above, but it is hardly necessary to say that what shall be regarded as the consequences of a proposition depend not on its verbal statement but on its real significance. Identity of expression is not identity of meaning. It is impossible to ascribe to Kant's principle the meaning supposed by Volkelt to be its essence. For, according to the latter, the positivist proposition implies that the one fact of knowledge is the immediately given, momentary, transitory atom of conscious experience. Anything beyond this is *trans-subjective*, has reference to things-in-themselves, and cannot be justified by experience, for *Vorstellung* cannot transcend itself. The experience of individual *Vorstellungen* is an immediate fact, and Volkelt, who seems surprised to detect in Kant the curious idea that the categories form an element in any portion of experience, in any object, will regard such general notions as *Vorstellungen* somehow associated with intuitions. It need cause us but small surprise that a critic who identifies Kant's statement as to experience with the positivist principle so interpreted, should find innumerable difficulties, obscurities and contradictions in the Critical System, and should be tempted to look about for the origin of such confusion.

This origin Volkelt finds to be the operation of a second theoretical principle, also employed with only half-intelligence by Kant, the principle of Rationalism—that determinations of thought are decisive as to the relations of existence. To this theorem he traces Kant's so-called subjectivism, his rejection of the view that the forms of intellect may be *at the same time* forms of real things, his distinction between phenomenal and noumenal, and generally the whole metaphysic that depends on the notion of *noumena*. Throughout there appear the confusion and chaos consequent on the application of two principles, the limits and relations of which were not clearly appre-

hended, and Volkelt has difficulty in finding terms hard enough to characterise the weak and "staggering state" of the Kantian system.

The doctrine of the thing-in-itself is, of course, a crucial point in any exposition of Kant. We can only say that in Volkelt's book we have found nothing beyond a reproduction of the argument first advanced against Kant by Schulze (*Ænesidemus*), while Volkelt's own view as to the thing-in-itself completely bars the way to adequate comprehension of Kant's real meaning. It may be added that most of the common mis-interpretations of cardinal doctrines in Kantianism are to be found in Volkelt. He thinks the 'Refutation of Idealism' an attempt to prove the existence of *Noumena*, maintains that the thing-in-itself is the only correlate to the unity of consciousness, and holds that Kant illegitimately but unavoidably applies the categories to the world of things-in-themselves.

Volkelt's own theory of knowledge, worked out in the criticism of Kant, may be summed up in two positions. Immediate experience is knowledge, and it consists of isolated *Vorstellungen*. Some *Vorstellungen*, or combinations of them, possess the property of necessity for thought (*Denknotwendigkeit*), and so compel the mind to receive them as true pictures of trans-subjective fact. On the whole, the theory of Schulze, or of the Scottish school revived in an even less critical form.

It is only justice to say that Volkelt's work, apart from its main idea, contains much acute and pointed analysis of doctrines in the *Kritik*. His third section, "Kant's metaphysical Rationalism" (pp. 87-160), contains good matter, and we hope to return to it in a longer notice of the many recent German contributions to Kant-literature.

ROBERT ADAMSON.

VIII.—NEW BOOKS.

[*These Notes are not meant to exclude, and sometimes are intentionally preliminary to, Critical Notices of the more important works later on.*]

Mind in the Lower Animals in Health and Disease. By W. LAUDER LINDSAY, M.D., &c. 2 vols. London : C. Kegan Paul, 1879. Pp. 543, 571.

This work contains an immense collection of facts with regard to the mental powers of animals; the first volume dealing with Mind in Health, the second with Mind in Disease. An introductory part on Comparative Psychology (in which the use of scientific psychological terminology is expressly disclaimed) compares the mental status of savages with that of the higher mammals and birds, greatly to the advantage of the latter. The author is an uncompromising advocate of the essential similarity of the human and animal mind. The body of the first volume next contains five separate parts (each comprising several chapters), touching respectively on Morality and Religion; on Education and its Results; on Language; on Adaptiveness; and on

Fallibility. In these parts, Dr. Lindsay asserts the existence of conscience in animals, especially dogs; suggests that they possess religious feelings towards man or towards inanimate objects regarded as fetishes; points out their capacity for self-education, as well as for education by men and by one another; gives an extended meaning to the word 'language,' which enables him to defend the theory of its existence in a vocal and non-vocal form amongst animals; discusses the use of implements, knowledge of numbers, or power of calculation; and argues against the supposed infallibility of instinct. The treatment of these subjects is extremely unsystematic, and the connexion of the argument is often difficult to trace. All the points are illustrated by numerous stories, with the names of the authorities generally appended. The second volume, dealing with Mind in Disease, commences, like the first, with a comparative view of the phenomena in the human and the animal subject. The Symptomatology of Animal Insanity is then treated at great length, but with little order, under the heads of Perversions of Natural Affections; Artificial Insanity; Intoxication; Dreams and Delusions; Stupidity; Suicide; Crime and Criminality; Physiognomy of Disease; Physical Causes; Moral Causes; Individuality; and Sensitiveness. The miscellaneous nature of these titles sufficiently illustrates the haphazard arrangement of the subject. A concluding part, Practical Conclusions, deals with man's treatment of the lower animals. A very copious bibliography and several well-arranged indexes occupy together 170 pages. The work throughout displays great industry, but many of its statements are somewhat extravagant, and several of the illustrative stories are, to say the least, improbable. The most important portion of the work is that which details the observed cases of animal insanity, in which the author's specialist acquirements enable him to make instructive comparisons with the analogous symptoms in human lunatics.

Seeing and Thinking. By the late WILLIAM KINGDON CLIFFORD, F.R.S., Professor of Applied Mathematics and Mechanics in University College, London, and some time Fellow of Trinity College, Cambridge. *Nature Series.* London: Macmillan, 1879. Pp. 156.

Under the above title there are here brought together three lectures delivered by Clifford some years ago, on "The Eye and the Brain," "The Eye and Seeing," "The Brain and Thinking," with an extra lecture "Of Boundaries in general". The last, though not specially connected with the others, is an admirable specimen of Clifford's expository power. The three lectures, while setting out in an easy and familiar way, the view of brain-action always adopted by the author, which supposes the optic thalami and corpora striata to form a relatively independent sensori-motor system within the higher system of the cerebral hemispheres, contain some points not urged, or not so explicitly urged, by him elsewhere. In particular, he adopts the view that conscious attention on occasion of this or that nervous process depends on a vaso-motor action at the particular point, determined

from the cerebral hemispheres. This leads him (p. 96) to distinguish the *appetite* from the mere *sensation* of hunger as "the state of being attentive to those connexions whereby, when a piece of food is put into your mouth you will naturally proceed to masticate and to swallow it"; more generally, Appetite is the name for "the concomitant states of the mind and body in which we are more particularly ready to reply to certain suggestions from without". Again, the *emotion* of anger "is most probably a state of extreme attention to those particular connexions which hold together the sensation of an enemy attacking you and the action of defence which you make against him". The social origin of *conceptions* or general knowledge is impressed with Clifford's wonted force.

Child and Child-Nature. Contributions to the Understanding of Fröbel's Educational Theories. By the Baroness MARENHOLTZ-BÜLOW. Translated from the Second Edition by ALICE M. CHRISTIE. London: Swan Sonnenschein, 1879. Pp. 186.

A very good rendering into English (with an interesting preface by the Translator, pp. x.) of a work written, originally in 1862, by one of Fröbel's most devoted disciples. The book contains, in short compass, everything that is necessary for a first understanding of Fröbel's remarkable theory, so profoundly inspired with true psychological insight into the early development of the human mind. It is only to be regretted that the author, like some other followers of her master, cannot refrain from mixing up a quite unnecessary amount of sentimental rhetoric with the real message she has to tell to the educators of the present time. Fröbel had a strong mystical vein, which in him must be accepted with his original genius; but a less clouded speech may fairly be expected from his disciples.

Ceremonial Institutions. Being Part IV. of the *Principles of Sociology.* (The First Portion of Vol. II.) By HERBERT SPENCER. London: Williams & Norgate, 1879. Pp. 237.

Of the twelve chapters here published, seven have already seen the light in periodical publications, but only six in England (*Fortnightly Review*). The author has commenced the publication of Vol. II. in Parts, because the separate divisions have a certain distinctness of subject, and would all of them together make too large a volume, while the earlier ones, though complete, would have to be kept back "for a year, or perhaps two years," till the later ones (VI., VII., VIII.) are written. The next part to be issued (V.) will treat of Political Institutions.

Kant's Critique of Practical Reason and other works on the Theory of Ethics. Translated by THOMAS KINGSMILL ABBOTT, M.A., Fellow and Tutor of Trinity College, Dublin. Being an Enlarged Edition of *Kant's Theory of Ethics.* With Memoir and Portrait. London: Longmans, 1879. Pp. lxiv, 438.

Mr. Abbot has in this edition included the Analytical part of the *Kritik der praktischen Vernunft* omitted in his previous translation of

Kant's writings on the general *theory of Ethics*. The volume thus includes now, besides the *Fundamental Principles of the Metaphysics of Morals* complete, and the First Part of the *Philosophical Theory of Religion*, the first complete English translation of the *Krit. d.p.V.* An Appendix contains the Essay *On a Supposed Right to tell Lies from Benevolent Motives*, with a short extract "On the saying 'Necessity has no Law,'" from another of Kant's Essays. In the Memoir prefixed, Mr. Abbott has little or nothing to say on the subject of Kant's philosophical development, but, besides remarking generally on Kant's ethical position, brings forward in an interesting way the less known works containing his physical speculations.

On Mr. Spencer's Formula of Evolution as an exhaustive statement of the Changes of the Universe. By MALCOLM GUTHRIE. London : Trübner, 1879. Pp. vii., 267.

As its title suggests, this work is an examination of the argument of Mr. Spencer's *First Principles*. The author does not mean to pronounce an opinion on the value of the doctrine of Evolution itself so far as it formulates certain uniformities of sequence among phenomena; but he inquires whether Mr. Spencer's formula of evolution regarded as the ultimate principle of philosophy satisfies the conditions of such a principle as laid down by himself. He first of all asks whether Mr. Spencer's definition of evolution, in terms of the factors matter and motion, supplies an adequate explanation of the world. Carrying back in imagination the process of dissolution of the cosmos till all differentiation is got rid of, he asks whether from a perfect homogeneity of primitive atoms any process of change is possible in the absence of some extraneous influence which is already an element of heterogeneity. He holds that such a process is unthinkable, and that Mr. Spencer really attains to the first stage in the process of evolution by assuming an initial degree of differentiation (between the nebulae and their medium, and the various elements). In like manner the author seeks to demonstrate that Mr. Spencer fails to account for the genesis of organisms and consciousness. The supposed process, he thinks, is not a real but merely a verbal one. Having thus satisfied himself that Mr. Spencer's formula of Evolution does not cover the facts of life, adaptation, consciousness, &c., the author proceeds to inquire whether it can be made to furnish an adequate explanation of all changes by help of the author's idea of Force. He seeks to show that this is only possible by conceiving of Force as something extraneous to matter in motion, and occasionally interfering with it in the shape of a *deus ex machina*. And, finally, failing to get light in this direction, he tries to amend Mr. Spencer's formula so as to include all the factors, and more especially Feeling, but cannot by this means attain anything but a vague formula possessing no constructive value. And so he concludes that any such theory of Evolution as Mr. Spencer's, which seeks to account for and "ideally construct" the changes of the universe by some assumption as to a primitive state of homogeneity, is doomed to failure. The author adds an examination of Mr.

Spencer's doctrine of the Unknowable, and of his mode of reconciling Religion and Science, and ends with an epitome of some of the principal criticisms of Mr. Spencer's system by English and American writers.

Problems of Life and Mind. By GEORGE HENRY LEWES. Third Series (continued). Problem the Second—"Mind as a Function of the Organism"; Problem the Third—"The Sphere of Sense and the Logic of Feeling"; Problem the Fourth—"The Sphere of Intellect and Logic of Signs". London : Trübner, 1879. Pp. 500.

"The present volume represents all the remaining manuscript for *Problems of Life and Mind*, so far as it was left by the author in a state that he would have allowed to be fit for publication. Much of it was intended to be re-written, and the whole, if it had undergone his revision, would have received that alternate condensation and expansion sure to be needed in a work which has been of many years' growth, and which treats of a continually growing subject. Some repetitions would have been avoided; many arguments would have been better nourished with illustration; and in the Third Problem there would doubtless have been a more evident order in the succession of chapters, the actual arrangement being partly the result of conjecture. The Fourth Problem, of which the later pages were written hardly more than three weeks before the author's death, is but a fragment; it will perhaps not be felt the less worthy of attention by those readers who have followed his previous works with interest and sympathy."

Man's Moral Nature. An Essay by RICHARD MAURICE BUCKE, M.D., Medical Superintendent of the Asylum for the Insane, London, Ontario. London : Trübner, 1879. Pp. 200.

The author very ingeniously attempts to show that the "moral nature," meaning the whole range of properly *emotional* experience, is probably connected with processes in the Great Sympathetic System, as the "intellectual" and the "active" natures are connected with processes of the Cerebro-Spinal System. Suggestions to this effect have been made before by various inquirers, but nobody has supported the position by so careful a consideration of the phenomena of Feeling from the subjective point of view, or has been less disposed to exaggerate the force of the objective evidence (which from the nature of the case, is mainly of a deductive character). The author's view of Feeling as subjectively manifested in the two fundamental couples of opposites—Love-Hate, Faith-Fear (Faith not to be confounded with intellectual Belief), is very strikingly worked out, and so is his view of the Special Emotions as varying combinations of these ground-forms with diverse intellectual representations (which he calls "concepts"). On the physical side of the case, he at all events shows that there can be no sufficient account given of the expression of Feeling in relation merely to the cerebro-spinal nervous system. Dr. Bucke writes with a singular earnestness of conviction, and even when his arguments are, as they not seldom are, rather fanciful, the spirit of them does not cease to be scientific. The book helps to shed light on the most obscure and perplexing department of the psychological field.

The "Method," "Meditations," and Selections from the "Principles" of DESCARTES, translated from the Original Texts. Sixth Edition. With a New Introductory Essay, Historical and Critical, by JOHN VEITCH, LL.D., Professor of Logic and Rhetoric in the University of Glasgow. Edinburgh and London : Blackwood, 1879. Pp. clxxxi, 292.

The special feature of this edition is the "longer and fuller discussion on the Philosophy of Descartes, especially with reference to its main historical developments," substituted for the Introduction originally prefixed to the translation of the *Discours de la Méthode*, when that originally appeared by itself in 1850. A considerable part of this new Introduction is devoted to "Hegelian Criticism," including not only a review of Hegel's criticism of Descartes, but a criticism of Hegel himself. "The volume is designed to represent all that is of essential importance in the speculative philosophy of Descartes," and does in truth, by the Translator's judicious selections from the *Principia*, and with the help of his explanatory Notes at the end, come very near to fulfilling that aim. It may still be wished, however, that he would add in a future edition a translation of the whole or part of the *Traité des Passions*, containing so many matters of psychological interest not touched, or less adequately touched, in the concluding part of the *Principia*, and also translations of the short *Règles pour la direction de l'Esprit*, and *Recherche de la vérité par la Lumière naturelle*, which give an insight into the true character of Descartes' new way of dealing with scientific and philosophical questions hardly to be gained from the more famous *Méthode* itself.

General Sketch of the History of Pantheism. In Two Volumes. Vol. II. "From the Age of Spinoza to the Commencement of the Nineteenth Century." London : Deacon, 1879. Pp. 347.

The anonymous author has here completed his professedly second-hand exposition of the thought of a number of philosophers who have struck him as more or less, in any way, pantheistic, or who, in some cases, have struck him as *not* pantheistic. His first volume was mentioned in MIND XII. (p. 580). From Spinoza (70 pp.) in the present volume, he passes in succession to Berkeley, Lessing, the Sceptics of the 18th Century (Voltaire, Hume, Kant), Fichte (53 pp.), Hegel (9 pp.), Schelling, to Leibnitz and Schopenhauer (brought together because the one was optimist, the other pessimist). A chapter on "The Philosophic and Scientific aspects of Pantheism," and a "Summary and Conclusion," make up the volume.

Observations et Réflexions sur le Développement de l'Intelligence et du Langage chez les Enfants. Par M. E. EGGER, Membre de l'Institut. (Mémoire lu à l'Académie des Sciences Morales et Politiques). Paris : Picard, 1879. Pp. 72.

This memoir was read and prepared for publication in 1871, but was laid aside until M. Egger's attention was called to it by the signs of interest in the subject which have lately been shown. M. Egger has

considered the growth of children's intelligence as a philologist rather than as a naturalist, so that his point of view is different enough from M. Taine's or Mr. Darwin's to give his work a value of its own apart from the actual addition of new facts which it makes. The statements are confined to the results of personal observation, and there is every appearance of the observation having been careful and skilful.

The time over which M. Egger's work extends is from the first production of voice to the time at which education has generally reached the phase of regular instruction. One of his remarks on early infancy is that children's voices have for some time no individual character, and acquire it with the beginnings of articulation; a thing which, as he says, must have been noticed by medical men, but does not appear to have been recorded.

A good deal of space is given to the fallacies of infantile reasoning produced by casual association or verbal puzzles. Some of the instances are very curious. A little boy could not understand how he was three years and ten months old: "Have I two ages?" he asked. A girl of about the same age, hearing her sister of nine years called Mary, fancied that she too would be called Mary when she was nine years old. The materialism of childish speculation is also illustrated: thus snoring is confounded with dreaming.

The procedure of children coining words and grammatical forms by analogy is noticed, though not quite so fully as might have been expected. Specimens are: *cersonnier* from *cerceau*, after *cordonnier*, &c.; *prendu*, *étéindu*, for *pris*, *éteint*; *nous voirons* for *nous verrons*; *déprocher* = *éloigner*, *délumer* = *éteindre*. Schleicher (quoted by M. Egger) has noticed similar formations in German. In English too they are frequent. The present writer's child, aged 3, turns strong verbs into weak ones, as *hidde* for *hidden*, or more often makes hybrid and redundant forms, as *stoled*, *brokend*, *takend*, and (once heard) *spilted*. The late use of pronouns (acquired as a rule at about two years) is also recorded: and an interesting parallel is drawn between the linguistic infirmities of children in their early conversation and those of adult deaf-mutes. Perhaps the oddest childish question reported by M. Egger is this of a little girl about five years old: "Est-ce que les prêtres mangent?"

[F. P.]

Ueber die Bedeutung der Einbildungskraft in der Philosophie Kant's und Spinoza's. Von J. FROHSCHAMMER, Professor der Philosophie in München. München: Ackermann, 1879. Pp. 172.

The author continues his enterprise of illustrating by historical criticism his own philosophic view as set out in his *Phantasie als Grundprincip des Weltprocesses* (MIND VII. p. 398). In the present work he takes the two philosophers "who have exercised, and still exercise, the most persistent influence on the modern world," and finding that both in their own way have anticipated himself in ascribing a quite special importance to the function of Imagination in all human conceiving, deals at length with this particular aspect of the philosophy of each of them.

IX.—MISCELLANEOUS.

MR. EDWIN WALLACE, Fellow of Worcester College, Oxford, is preparing for publication by the Syndics of the Cambridge University Press an edition of Aristotle's *De Anima*. The work, besides containing a Greek text and English translation of the treatise, with critical and explanatory notes, will embrace an introduction on the Psychology of Aristotle: and the editor will particularly seek to maintain the general correctness of the received text against the emendations and criticisms of Torstrik. The work is well advanced, and will probably appear in the course of the present year.

PROFESSOR ALFRED GOODWIN, of University College, London, Fellow of Balliol College, Oxford, is engaged on the preparation of a textbook of Greek Philosophy. The work will deal with Greek Philosophy in its historical development, and embody in its text illustrative quotations translated from each writer treated of, or, where this is impossible, translations of ancient notices of his tenets.

THE EDUCATION SOCIETY has brought its discussions on Prof. Bain's *Education as a Science* to a close, and has arranged the following programme for 1880 : (1) Discussions on the Educational Principles of Comenius, Ascham Jacotot, Rousseau, and Pestalozzi : (2) Discussions on papers by foreign Educationalists, viz., "The Effects of the Fatigue caused by mental work in children, Report of an Experiment" by Dr. de Sikorsky, St. Petersburg, "On the Imagination" by Dr. Paul Hohlfeld of Dresden, "The History of Art as a Subject of Education" by Frau K. Göpel, author of *The Illustrated History of Art*, also papers by Baroness v. Marenholtz-Bülow, Prof. Dr. Holzamer, and Prof. Bona Meyer; (3) The Elaboration of a scheme for a Model School (Higher Elementary). The Model School, founded in 1875 by the Ligue de l'Enseignement at Brussels, has been selected by the Committee as being both in principle and execution the best attempt that has hitherto been made in this direction: the scheme, which will be presented to the Society, will be based upon this. The Hon Sec. (Mr. C. H. Lake, Caterham) will be glad to receive any papers or suggestions which can be of assistance to the Society in carrying out this work.

M. GABRIEL COMPAYRÉ, professor of Philosophy at Toulouse, has just published a translation of Prof. Huxley's *Hume* (Paris: Germer Bailliére, 1880), with a short Introduction (pp. xxxix.), in which he makes a number of interesting and true observations on Hume's philosophy, and corrects Prof. Huxley's exposition at a few points (*e.g.*, where Hume is charged with supposing the passions to be simple states, because he calls them "impressions," though he had distinguished between "complex" and "simple" impressions). M. Compayré is chiefly concerned to maintain the perfectly serious character of Hume's thinking under its superficial appearance of scepticism. He has good remarks at p. xvii. in defence of Subjective Psychology (as pursued by Hume) against the current attacks made in the interest of a

physiological treatment (having, probably, in view more especially M. Ribot's recent declarations in the introduction to his *Psychologie allemande contemporaine*).

HERR F. TONNIES has begun in the last number of the *Vierteljahrss. für wiss. Philosophie* (III. 4) a series of "Remarks on the Philosophy of Hobbes," based upon original study of MSS. in the British Museum and elsewhere. He explodes in a vigorous fashion the current notion in the histories of philosophy that Hobbes was the disciple of Bacon (a notion which no careful student of Hobbes at first hand could ever have formed), and places Hobbes in his right relation to the more important movement, whethcr called philosophic or scientific, inaugurated by Galileo. Some new light is thrown on the beginning of Hobbes's philosophic activity about the age of 40, and the attitude he took up some years later to Descartes' physical speculations. Herr Tonniess's assertion that the *Human Nature* and *De corpore Politico* (written, as can be proved, ten years before as one continuous work) were published in 1650 "without Hobbes's consent" is somewhat at variance with the publisher's introductory note to the *Human Nature* on its appearance.

PROFESSOR TH. GOMPERZ of Vienna, whose collection of two papyrus rolls containing fragments of Epicurus's Περὶ Φύσεως, in the Herculaneum library, led him to maintain that Epicurus was not an Indeterminist, as commonly reported (see MIND III., p. 443)—a view farther strengthened by the discovery of a third transcript of the corresponding parts of the same work (see MIND VII., p. 434)—now announces that he is engaged in the preparation of an edition of all the extant fragments, with the gaps as far as possible restored. Meanwhile he has printed, as a specimen, some three and a half pages containing the passages treating of the doctrine of Will.

J. VERSLUYS has begun to issue at Groningen, in Holland, a series of Dutch translations of works or papers, bearing on Education, to form a "Paedagogische Bibliotheek". Part I. reproduces M. Taine's and Mr. Darwin's well-known articles (in the *Revue Philosophique* and in MIND VI., VII.) on the early development of children; Part II., Locke's *Thoughts concerning Education*; Part III., Fénelon's *Sur l'Éducation des Filles*.

PROFESSOR WUNDT of Leipsic has just published Vol. I. (*Erkenntnisslehre*) of a comprehensive work on Logik (*Logik: Eine Untersuchung der Principien der Erkenntniss und der Methoden der wissenschaftlichen Forschung*, Stuttgart: Enke. Pp. 397), to be completed in one other volume.

THE JOURNAL OF SPECULATIVE PHILOSOPHY.—Vol. XIII., No. 4. Payton Spence—"Time and Space considered as Negations". W. E. Channing—"Cottage Hymns". 'Hegel on Romantic Art' (tr.). M. Tuthill—"The Matter and the Method of Thought". Notes and Discussions. Book Notices.

REVUE PHILOSOPHIQUE.—IVme Année, No. 10. J. Delboeuf—"Le sommeil et les rêves. I. Aperçus critiques de quelques ouvrages récents". J. Boussinesq—"Sur le rôle et la légitimité de l'intuition géométrique". Th. Ribot—"Les mouvements et leur rôle psychologique". A. Baudouin—"Histoire critique de Vanini" (fin). Analyses et Comptes-rendus. Rev.

des Périod. Correspondance ('Un projet d'Association philosophique'). No. 11. G. Compayré—'Du prétendu scepticisme de Hume'. P. Tannery—'Une théorie de la connaissance mathématique: M. Schmitz-Dumont' (fin). J. Delboeuf—'Le sommeil et les rêves. II. Leurs rapports avec la théorie de la certitude'. Analyses et Comptes-rendus. Rev. des Périod. No. 12. Guyau—'De l'origine des religions'. B. Perez—'L'éducation du sens esthétique chez le petit enfant'. Notes et Documents (Ch. Richet—'De l'influence du mouvement sur les idées'. J. Delboeuf—'Sur le dédoublement du moi dans les rêves'. C. Henry—'Les manuscrits de Sophie Germain: Documents nouveaux'). Analyses et Comptes-rendus (G. H. Lewes, *The Study of Psychology*, &c.) Correspondance (A. Fouillée —'L'influence de l'idée de liberté sur le déterminisme'). Rev. des Périod.

LA CRITIQUE PHILOSOPHIQUE.—VIII^e Année, Nos. 33-45. F. Pillon—'L'éducation morale des deux sexes' (33); 'La méthode dans l'enseignement primaire' (43). 'L'enseignement philosophique dans l'instruction secondaire' (45). L. Ménard—'Un problème d'éducation' (Comment parler à l'enfant de la mort et de la destinée humaine?) (34, 41). M. Guyau—'Un problème d'éducation' (36). J. Milsand—'Un problème d'éducation' (37). C. Renouvier—'Les labyrinthes de la métaphysique; Clarke contre Collins. Les arguments déterministes de Colling reprise par M. A. Fouillée' (34); 'Le déterminisme socratique chez Descartes' (38); 'Le déterminisme et le libre arbitre. Spinoza et Malebranche, derniers des scolastiques' (43). F. Henneguy—'Un problème d'éducation' (40).

LA FILOSOFIA DELLE SCUOLE ITALIANE.—Vol. XX. Disp. 1. T. Mamiani—'Filosofia della realtà'. C. Cantoni—'G. M. Bertini'. M. Panizza—'Antropologia: La fisiologia del sistema nervoso nelle sue relazioni coi fatti psichici'. Bibliografia, &c. Disp. 2. G. Barzellotti—'La critica della conoscenza e la metafisica dopo Kant'. L. Ferri—'Osservazioni e considerazioni sopra una bambina; I primi studii della conoscenza'. M. Panizza—'Antropologia, &c.' (II). F. Ramorino—'Di alcune argomentazioni contenute nel *Protagora di Platone*'. Bibliografia, &c.

ZEITSCHRIFT FÜR PHILOSOPHIE, &c.—Bd. LXXV. Heft 2. R. Falckenberg—'Ueber den intelligiblen Charakter' (II). J. B. Weiss—'Untersuchungen über F. Schleiermacher's Dialektik' (II. 2). Recensionen (T. Fowler, Bacon's *Novum Organum*, &c.).

ZEITSCHRIFT FÜR VÖLKERSYCHOLOGIE U. SPRACHWISSENSCHAFT.—Bd. XI, Heft 3. J. Bona Meyer—'Genie u. Talent: eine psychologische Betrachtung'. H. Steinthal—'Darstellung u. Kritik der Böckhschen Encyklopädie u. Methodologie der Philologie' (II). Beurtheilungen.

PHILOSOPHISCHE MONATSHEFT.—Bd. XV., Heft 9.—H. Vaizinger—'Eine Blattversetzung in Kant's *Prolegomena*'. Recensionen. Literaturbericht. Replik von Prof. W. Schuppe; Duplik von Dr. J. Witte. Bibliographie. Phil. Vorlesungen an den deutschen Hochschulen im Winter-Semester, 1879-80, &c.

VIERTELJAHRSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE.—Bd. III., Heft 4. B. Erdmann—'Zur zeitgenössischen Psychologie in Deutschland, mit besonderer Rücksicht auf Th. Ribot, *La Psychologie allemande contemporaine*'. K. Lasswitz—'Die Erneuerung der Atomistik in Deutschland durch Daniel Sennert u. sein Zusammenhang mit Asklepiades von Bithynien'. A. Spir—'Drei Grundfragen des Idealismus: I. Beweis des Idealismus'. F. Tonnies—'Anmerkungen über die Philosophie des Hobbes' (I). W. Schuppe—'Bergmann's *Reine Logik* u. die *Erkenntnisstheoretische Logik* mit ihrem angeblichen Idealismus. Recensionen. Selbstanzeigten.

CORRECTION.—Omitted from Contents of Vol. IV. (issued with No. XVI.), under the head of 'Critical Notices'—

STEWART, J. A.—H. Jackson, *Book V. of the Nicomachean Ethics*, p. 284.